THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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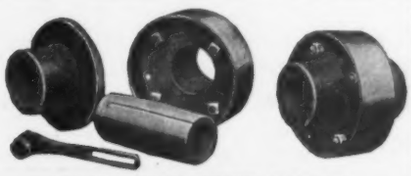

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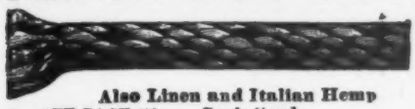

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THE IRON AGE

New York, Thursday, February 1, 1906.

The Universal Multispindle Automatic Screw Machine.

A special interest attaches to the five-spindle screw machine illustrated, aside from its mechanical construction, in that it is the combined design of Christopher M. Spencer, the inventor of the first of the automatic screw machines, and of R. Hakewessel, the designer of the first successful multispindle automatic screw machine. These two men are now associated in the management of the recently established Universal Machine Screw Company, Hartford, Conn., which will build the new machine. The aim of the designers has been to produce a multiple spindle screw machine so simple of construction that it can be readily understood and operated by workmen familiar with any single spindle machine. The only multiplicity of parts is in the spindles, of which there are five, the same number of tools being required as in a single spindle automatic screw machine. All the tools act simultaneously on the five bars of stock, each group of tools performing its functions when the work indexes to each of the five positions. As many as 12 tools may be used on pieces requiring that number.

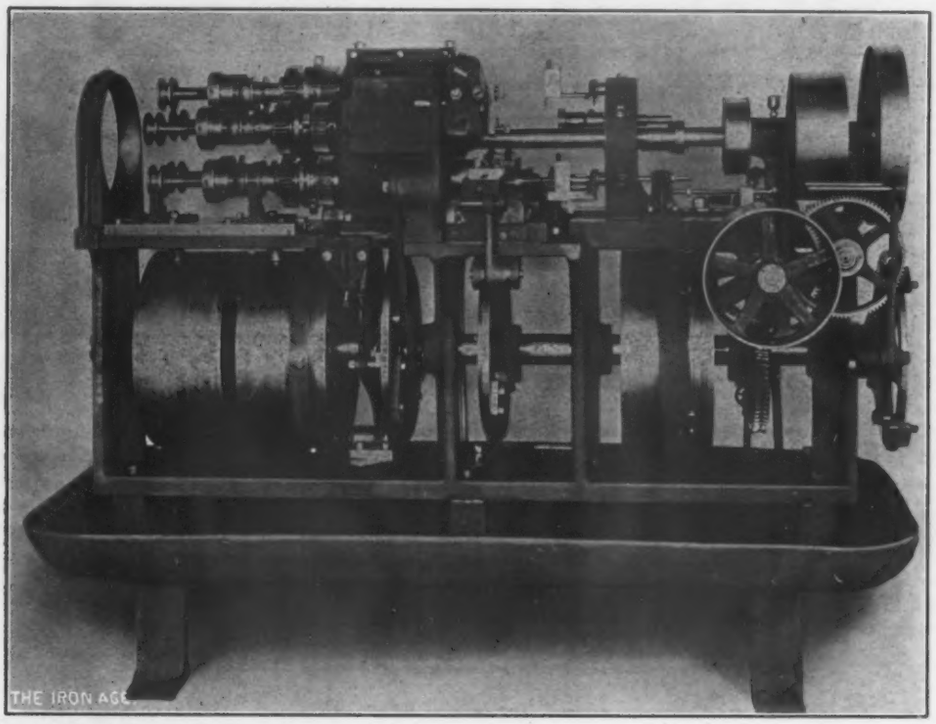


Fig. 1.—Front View of the Five-Spindle Automatic Screw Machine Made by the Universal Machine Screw Company, Hartford, Conn.

The machine, front and rear views of which are given in Figs. 1 and 2, is driven by three belts from a countershaft. Two are used to drive the spindle through spur gears and a center shaft and sleeve, the sleeve giving the direct motion and the center shaft the reverse motion for threading. The third belt drives the cam shaft through a worm gear. The spindles carrying the work revolve in a cylinder, which is indexed by means of a rocker arm and hook finger, explained in detail later. The index mechanism takes the work along from one tool station to another during the five stages of manufacture. The cylinder is positively locked in each successive position by a taper plug which is carried in the cylinder casing.

Three cross slides are used, one at the rear and two at the front of the machine, each slide having an independent motion from cam disks. The slide carrying the box tools and the threading device is of simple design and is actuated from a cam drum. The cam shaft has a fast and slow motion and may be started or stopped independently of the spindle by shifting the belt from or to a loose pulley.

The positions of the five spindles in the cylinder in relation to the central shaft and frame are shown in the end view in Fig. 3. At position 1 of the spindle the stock is being fed out by the feed slide; at position 2 may be seen a sectional view of the chuck closing fingers; at position 3 the adjusting collar and the pin clutch for the positive drive while threading; at position 4 an end view of the yoke which releases the cone friction clutch and engages the pin clutch, and at position 5 an end view of the spindle cone and section of the spindle at this point. The stock feeding slide A, Fig. 3, is actuated by a cam drum, one of the cam strips being adjustable to regulate the length of feed. The opening and closing chuck B is operated in the usual manner through a push tube, C, the end thrust of which is taken by a hardened steel collar D. The chuck is opened by the fingers E, when acted against by a steel wedge.

As has already been stated the drive of the sleeve, shown at K in the right hand view in Fig. 3, and that of the shaft L, are distinct. The sleeve gives the forward motion of the spindles, and is always in use on four of the five spindles, the exception being the one which is in position for threading. Keyed to the sleeve is the central gear M, which drives all the spindles through the friction gear and the friction cone P, giving the forward motion. The gear N, keyed to the central shaft, for the reverse motion, drives through gear R, which carries a spring pin, F, that acts as a clutch. The cone friction is released and the pin clutch engaged by means of the yoke H, operated from the cam drum. The cone friction is held by three springs, one of which is shown in Fig. 3. The spindle cones J are of bronze and revolve in ground and hardened steel bearings, to insure that whatever wear there may be shall come on the revolving parts, thus maintaining the alignment. The mechanisms of the five spindles are identical, that each may perform its proper

function as it brings its work into position for the various operations.

The details of the indexing mechanism are shown in Fig. 4. In the rear of the cylinder recesses have been milled out to accommodate the hook finger *a*, which is actuated by the rocker arm *b*, pivoted at *c*. The function

Fig. 5 gives two views of the variable speed mechanism for driving the cam shaft. Pulley *h* is fastened directly to the worm shaft. Pulley *i* drives the worm shaft through the change gears *k*, a pawl *l* and the ratchet *m*, carried on the gear *n*. Pulley *j* is loose. For indexing and the rapid return of the slides from the work

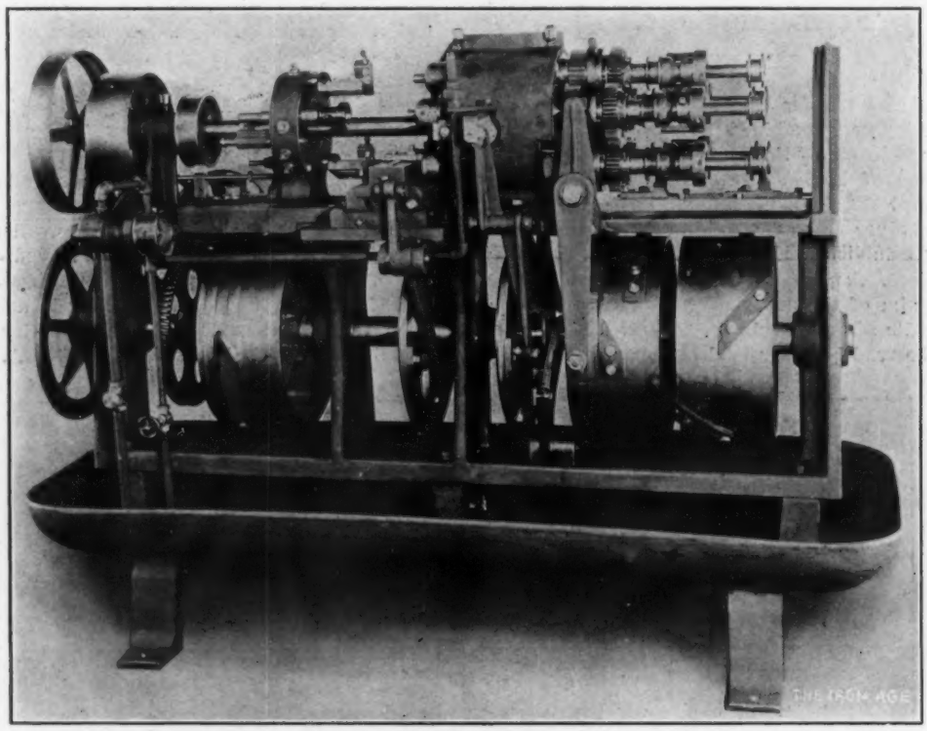


Fig. 2.—A View of the Same Machine from the Rear.

of the hook finger is to pull the cylinder around for its next position of the spindles, to a point at which the locking pin is exactly opposite its seat in the cylinder. A sectional view of the locking pin and its recess is shown in Fig. 3. The screw *e* carried in the bracket *f* acts as a positive stop to insure the accuracy of the indexing. The locking pin is held out by its cam strip *g* until the hook finger has stopped the cylinder in its position, and holds it there so that the locking pin enters

and for bringing the slides to the work preparatory to cutting, the belt drives through the pulley *h*. The constant speed of pulley *h* is determined by the speed at which the cylinder can be indexed. This speed is by far too fast for the feed of tools while cutting steel. A

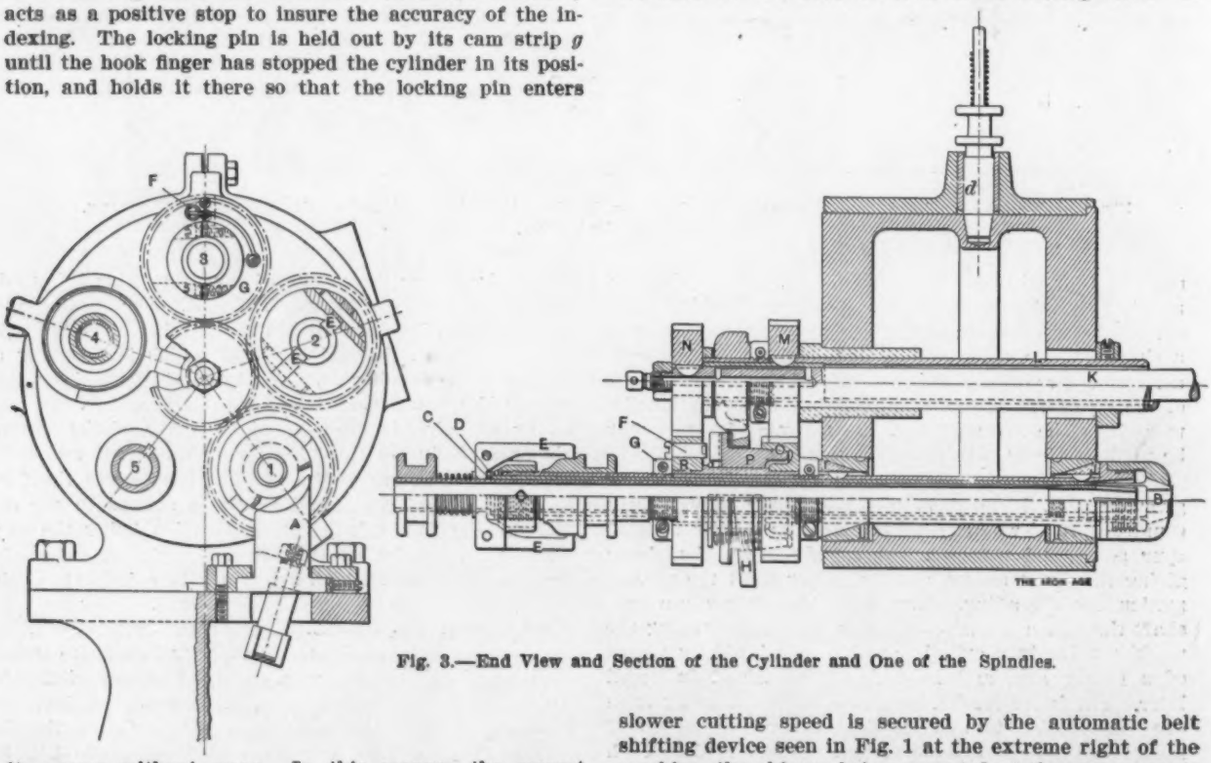


Fig. 3.—End View and Section of the Cylinder and One of the Spindles.

its recess without wear. In this manner the correct alignment of the spindle is again safeguarded. The drawing shows two positions of the hook finger and its arrangement. The full lines show the finger about to be returned for a new indexing, and the broken lines show the finger ready to start on its next indexing.

slower cutting speed is secured by the automatic belt shifting device seen in Fig. 1 at the extreme right of the machine, the shipper being operated at the proper angle of movement by dogs on the cam disks at the end of the machine. The belt is shifted to pulley *i*, from which the drive is through change gears *k* by means of which the relation between cutting speed and constant speed may be whatever is desired. On brass work it is likely that

the cutting speed should be greater than that at which the machine can index. Pulley *j* eliminates one annoyance of former screw machines, the necessity of running the belt off until the pump has furnished a sufficient supply of oil preliminary to starting the work. The pulley

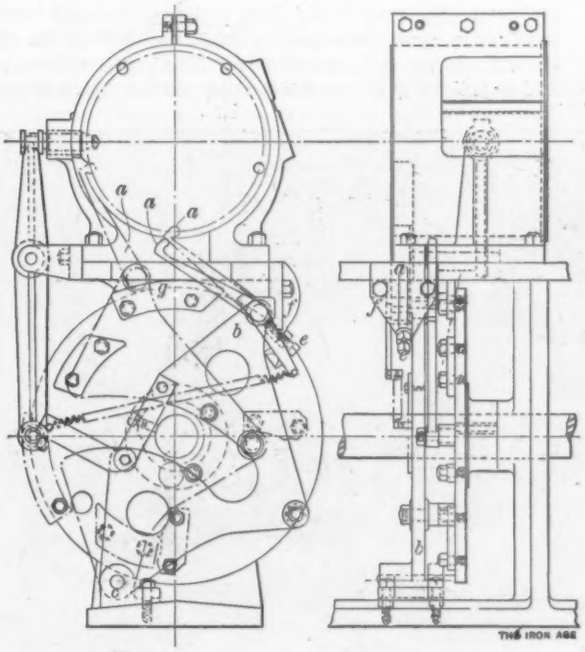


Fig. 4.—Details of the Indexing Mechanism.

j is loose and the belt is shipped to it where it runs idle until the machine is in readiness to begin work.

The special threading device of the box tool slide is shown in Fig. 6. The usual die holder is used, as indicated. This is held in a socket *o* which extends through the box tool slide and carries pins *p* and *q*, which arrest the movement of the die in its two directions. The forked casting *r*, carried by the shaft *s*, determines the length to be threaded. This casting has a straight part, shown in section at *w*, against which

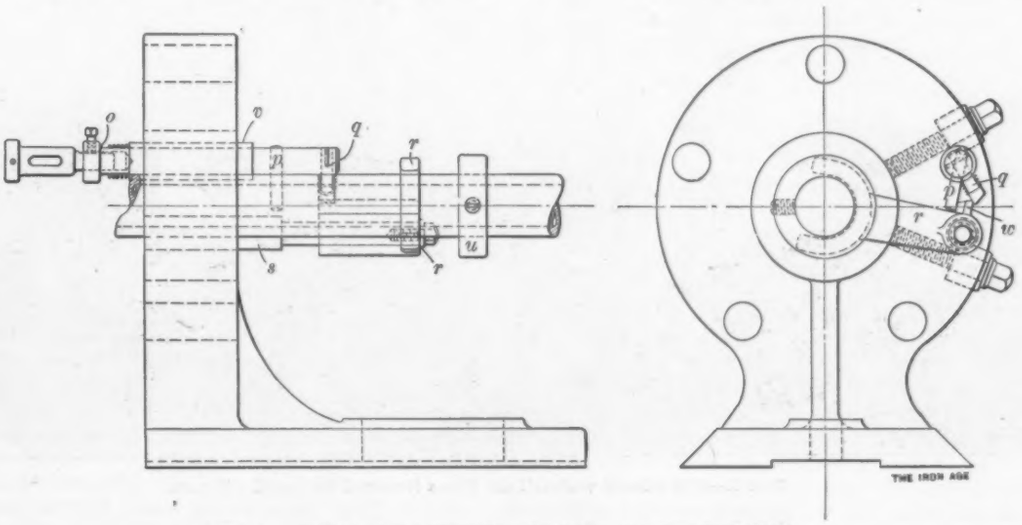


Fig. 6.—Details of the Threading Device in the Box Tool Slide.

the pins act while performing their work. The pin *p* is for holding the die stationary while it is cutting, in which position the pin is shown. During the cutting process the pin rests against the straight edge, but when the feed of the slide carries the pin to the end of the straight edge the die and the pin begin to revolve, and the pin striking the bevel edge of the casting kicks it back against the stop collar *t*. When the spindle reverses the spring pin *q* engages with the opposite edge of the straight edge and the die runs off the work. When the box tool slide returns to its rear position the collar *u* acts against the forked piece *r* and returns it to the shoulder of *s*. The adjustment for lengths is obtained by the positions of *s* and the bushing *v* of the slide. The form of binder used in the box tool slide is shown in the end view.

The half-tone illustrations are of the company's No. 2 multispsindle machine. Its capacity is ¾-inch stock 5 inches long. A smaller size, known as the No. 1, having a capacity of ⅝-inch stock 3 inches long, is in the works. A third size is about to be built, with a chuck capacity of 1¼ inches diameter and 5 inches long. The capacity in number of pieces per hour is limited only by the time required for the longest operation. For in-

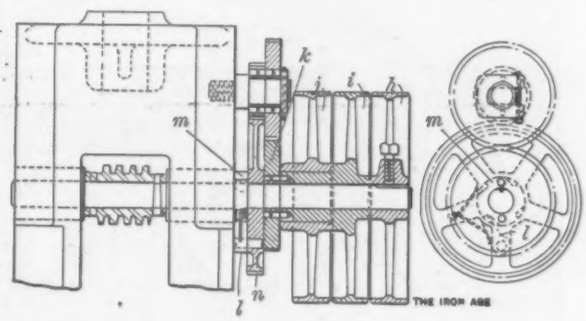


Fig. 5.—The Variable Speed Drive for the Cam Shaft.

stance, if cutting off the piece is the longest cut, the time required for this plus the time for indexing and feeding would be the maximum for a piece. Time of production may be reduced, when any one operation is very much longer than the others, by dividing it between two tool stations.

The Youngstown Sheet & Tube Company's New Plant.—Rapid work is being made on the erection of the Bessemer steel plant and finishing mills of the Youngstown Sheet & Tube Company, Youngstown, Ohio. Briefly the new plant will contain two 10-gross-ton acid Bessemer steel converters with an annual capacity of 360,000 gross tons of ingots, four cupolas, four four-hole soaking pits, one 40-inch blooming mill, one 18-inch continuous billet mill, one 18-inch continuous sheet bar mill, one 10-inch continuous skelp and hoop mill and one two-high 42-inch universal mill; product, blooms, slabs, billets, sheet bars, skelp, hoops and universal plates. When additions are completed the works will have an annual capacity of 360,000 tons of blooms, slabs, billets and sheet bars, 30,000 tons of muck and scrap bar, 30,000 tons of black sheets, 24,000 tons of galvanized sheets, 12,000 tons of painted and corrugated roofing, 72,000 tons of universal plates, 150,000 tons of skelp and 140,000 tons of black and galvanized pipe. The company now makes wrought iron and steel pipe from ⅜ to 12 inches in diameter.

The Sturtevant High Pressure Blower.

A positive pressure blower capable of delivering air at ten pounds per square inch has lately been developed by the B. F. Sturtevant Company, Boston, Mass. It is made in two types, horizontal and vertical, the first having two shafts side by side in a horizontal plane and the second one shaft above the other. In principle they are identical and consist essentially of a cast iron shell or housing containing two rotating members or rotors. One of these, the impeller, does the compressing and revolves in the larger part of the casing, which in the vertical type is the lower. The other rotor, known as the idler, does no work, but successively provides spaces or chambers of proper shape at the desired points in the revolution to allow the impeller blades to return to the suction side of the blower without permitting the compressed air to escape.

All of the accompanying illustrations pertain to the vertical type of blower. Fig. 1 shows a blower and motor mounted on a common bed plate, with shafts offset to transmit the drive through spur gears with a considerable speed reduction; Fig. 2 is a view of the unassembled parts of a blower; Fig. 3 a side elevation, partly in section, and an end section, and Fig. 4 a diagram which will be used in explaining the operation.

The idler contained in the smaller part of the casing consists of three hollow vanes or blades of cast iron in one piece with the shaft, the combined circumferential surface of which is more than half that of the inclosing cylinder. The idler is revolved at the same speed as the impeller by spur gears running in oil and incased for protection against dirt and accident. The impeller, mounted on the driving shaft, also has three blades, which are approximately diamond shaped in cross section and are supported by a central web keyed to the steel shaft. Being symmetrical the impeller is perfectly balanced at all speeds. As it revolves three separate pockets are formed in the annular space between the shell and a core extended lengthwise of the lower part of the casing. In reality the core is in two parts, each cast in one piece with the end plates, the space between them being filled by the web of the impeller.

Ample clearance between the rotating members and the casing insures high mechanical efficiency by avoiding internal friction due to contact of metal surfaces. Between the idler and the impeller the space is so great that

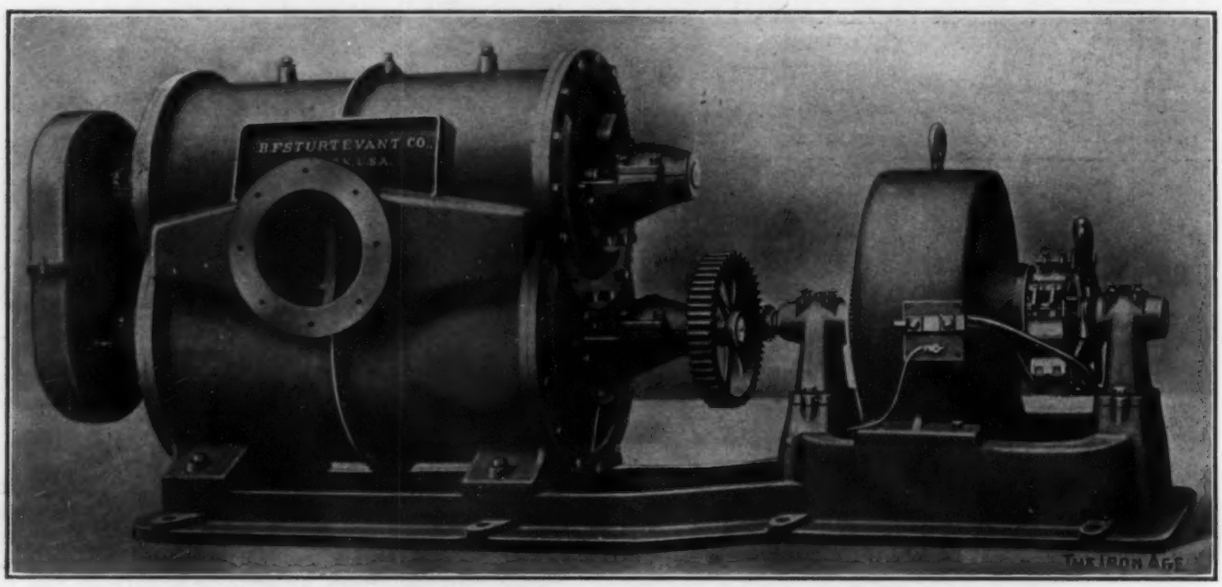


Fig. 1.—Motor Driven Positive Pressure Blower Built by the B. F. Sturtevant Company, Boston, Mass.

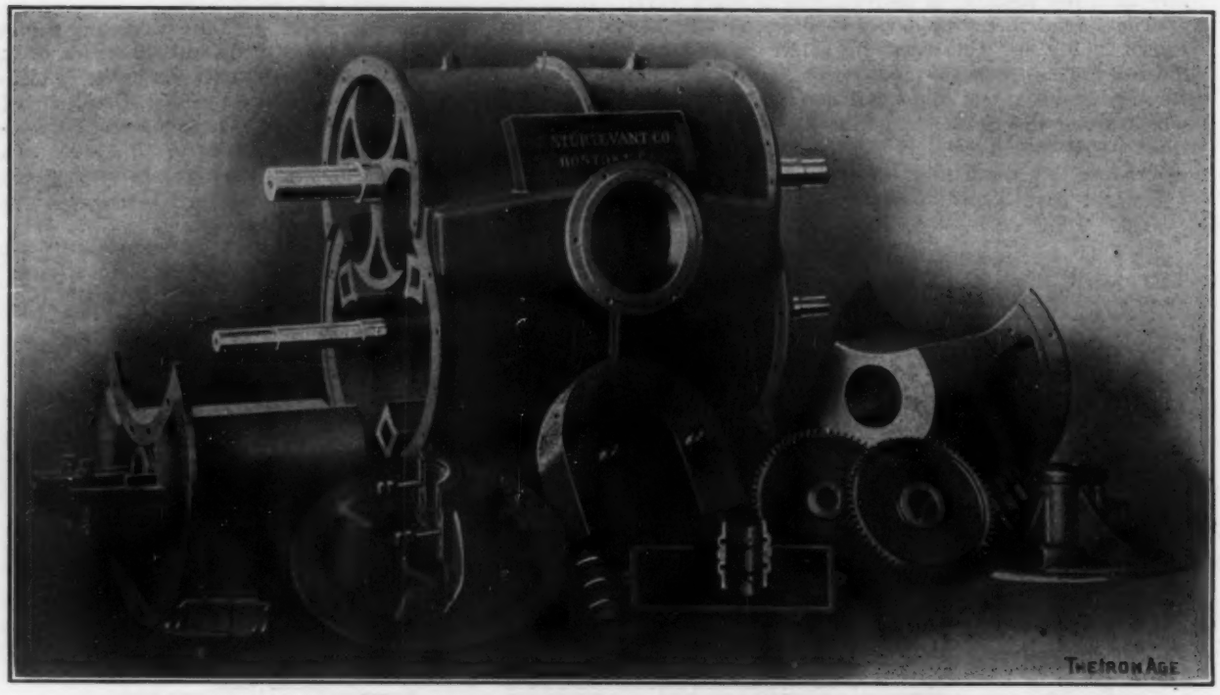


Fig. 2.—The Blower with All the Parts Removed Except the Rotors.

only excessive wear would allow the two rotors to come in contact. This clearance is at least ⅛ inch in small blowers and in large sizes ½ to ¾ inch.

The cast iron shell or casing, consisting of two intersecting hollow cylinders, is accurately bored and amply strong and rigid to withstand the strains due to handling, setting on the foundation and operating at high pressure. The ends of the casing are finished to receive the four cover plates, in which are cast chambers or passages for lessening the noise and increasing the efficiency of the machine, as explained later. On either side of the housing in the vertical pattern are openings for the intake and discharge of air, flanged and tapped for standard gas pipe fittings. The small sizes of blowers are usually furnished in the vertical type and large blowers in the horizontal. The latter have the air openings at the top and bottom. In every respect the casing and rotors are symmetrical, permitting the blower to run in either direction.

Except in blowers of large size the lower half of each journal box is cast in one piece with the cover plate, insuring rigidity, simplicity and correct alignment. The boxes, except those for very small blowers, are of the ring oiling type, lined with Sturtevant white metal, hammered in and accurately bored.

When it is desired to maintain absolutely constant pressure the blower is provided with a relief valve or automatic governor. For transferring gases and air at high pressure, stuffing boxes are provided for the shafts and a drain at the bottom removes tar and other distilled liquids.

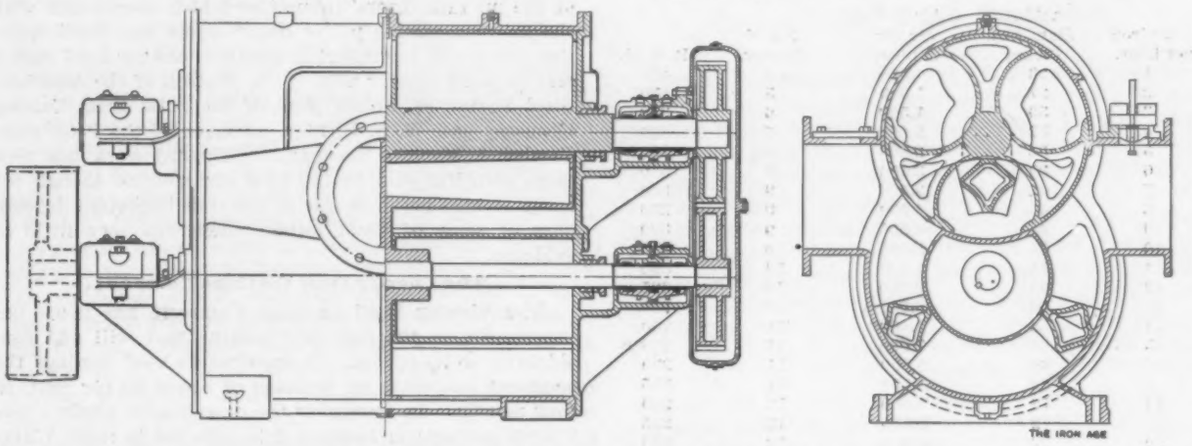


Fig. 3.—Side Elevation and Section and End Section of the Sturtevant High Pressure Blower.

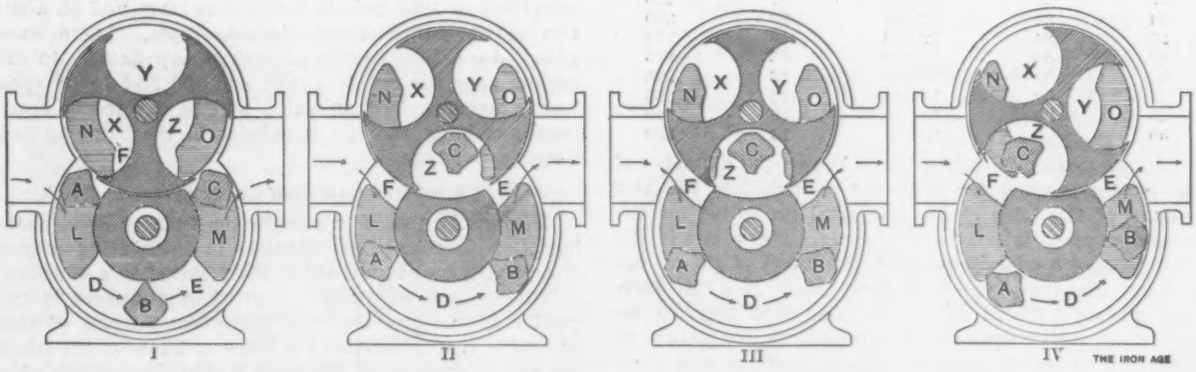


Fig. 4.—Diagram Showing Four Successive Stages in the Operation.

Operation.

Air at atmospheric pressure entering the blower at the intake is successively imprisoned in the three pockets formed by the three blades of the revolving impeller, and discharged at any desired pressure up to ten pounds per square inch. The volume of free air delivered varies directly with the number of revolutions; the pressure varies with the resistance met in the delivery pipe.

The principle upon which the blower operates is clearly shown by the diagrams in Fig. 4, which are sectional views of the rotors and casing. In the explanation it is assumed that the blower is running at a speed to produce average pressure and that this pressure exists in the discharge outlet.

While the rotating members were in the positions shown in I, air entered freely and completely filled chambers X and D, while pockets E and Z were discharging air to the delivery pipe. From the previous movement of the rotors, the pressure in Y, filled with air carried over by the revolving idler, had been increased slightly by air flowing through the leakage passage N, as will be explained later. The space between blades A and C, just above the concave portion of the core, was practically filled by the wing of the idler and consequently while in this position it took no part in the action.

While revolving from the position I to that shown at II the air in pocket D has been carried along and the communication between chamber D and the inlet has been cut off. Space Z is filled with compressed air, which further movement will carry toward the suction end, where it will flow back to the inlet and in escaping cause noise. But this loss and noise is prevented by the leakage chamber O, which allows the pressure to be transmitted to the air in space Y, thereby increasing its density just before it is discharged.

Continued rotation carries the rotors to the position shown at III; air at atmospheric pressure is now entering pocket F, the air in D is being carried around between the blades A and B in the annular space, and E is discharging. Above the impeller the remaining pressure in Z is being transmitted to the air in X by means of the leakage passage N, provided for the purpose, thereby making its pressure a little greater than atmospheric. The air in space Y, under slight pressure from previous leakage, is imprisoned and being carried around by the idler.

When the position IV is reached, pocket F will be filling, the pressure in chamber Z will have been reduced to atmospheric by leakage, space Y will discharge and a little compressed air from the delivery pipe will flow back through leakage passage M and increase the pressure in D, which will result in a quieter discharge when further movement brings B into the discharge passage.

The purpose and advantage of the leakage chambers are now apparent; they make it possible to recover the

pressure tending to escape from the impeller pockets and by making the increase in pressure gradual cause the blower to run with less noise. Leakage passage L has little effect when the blower runs in the direction shown here, but its presence makes the blower reversible.

It will be noticed that the impeller carries three blades, set at equal distance around the periphery, thus causing three admissions of air at each revolution. Upon leaving the position IV the rotors quickly reach a position in which the conditions are exactly the same as those shown in position I, the operation continuing as explained.

Blowers for the Foundry.

In selecting a blower for the foundry it is customary to rate the volume of air according to the maximum amount of iron which the cupola can melt. The capacity of the cupola being known, the size of the blower may be found from the fourth column of the following table:

Foundry Table for Sturtevant High Pressure Blowers.

Tons iron per hour.	Usual inside diam. cup. Inches.	Cubic feet of air per minute.	No. of blower.	R. P. M.
1	23	300	4	450
2	27	1,000	5	430
3	30	1,500	6	380
4	32	2,000	7	350
5	36	2,500	8	280
6	39	3,000	8	330
7	42	3,500	9	260
8	45	4,000	9	290
9	48	4,500	9	330
10	54	5,000	10	270
11	54	5,500	10	300
12	60	6,000	10	325
13	60	6,500	11	230
14	60	7,000	11	250
15	66	7,500	11	270
16	66	8,000	11	290
17	66	8,500	11	305
18	72	9,000	12	200
19	72	9,500	12	215
20	72	10,000	12	225
21	78	10,500	12	235
22	78	11,000	12	245
23	78	11,500	12	255
24	84	12,000	13	200
25	84	12,500	13	210
26	84	13,000	13	215
27	90	13,500	13	225
28	90	14,000	13	235
29	90	14,500	13	240
30	90	15,000	13	250

If the maximum output is not known the diameter of the cupola becomes the basis for computation, the first column of the table giving the usual capacities for the diameters given in the second column. The values in the third column are based on 30,000 cubic feet of air per ton of iron. The company's tests show this to be a fair average, although 25,000 to 40,000 cubic feet may be required, depending upon the local conditions and method of operation. In case a given cupola requires less than 30,000 cubic feet per ton, the blower will melt a larger amount of iron than that given in the table.

A Proposed High Steel Tower at Coney Island.—The proposition to erect a steel tower 700 feet high at Coney Island took definite form the past week, when announcement was made of the formation of the Friede Globe Tower Company to build it. The proposed tower will be 300 feet in diameter and contain a pedestal roof garden, to be placed 150 feet above the ground, including a restaurant, theatre and roller skating rink; an aerial hippodrome, 250 feet above the ground; a moving café and dance hall, 300 feet up; a palm garden at 400 feet, an observatory platform at 500 and still higher a branch of the Weather Bureau, including the largest revolving searchlight in the world. It is estimated that more than 7000 tons of steel will be used in the structure, which is to be fireproof, and the cost of which is placed at $973,500. The company is capitalized at $3,000,000. Samuel M. Friede, the inventor, is president of the company and the remaining officers are: Edward A. Langan of Brooklyn, vice-president; Alfred Price, secretary; H. R. Wade, Manhattan, treasurer. The office of the company is at 37 William street, New York.

Steel Foundry Activity at Chester, Pa.

CHESTER, PA., January 27, 1906.—With nearly 2000 men employed in the steel foundries operated here, Chester has the distinction of being the busiest steel casting center in the country. With the exception of the Delaware River Steel Casting Company's plant, which was sold under legal proceedings recently, but for which no definite plans of resumption have been announced, all the six steel foundries in the city are in full operation. Nearly all have made improvements in the past year, extensive in some cases, and further additions in the case of at least two plants will be made in the coming year. The boom in railroad equipment work has been responsible for the present prosperity of the local foundries, it being estimated that one large locomotive works alone has contributed 40 per cent. of the work now in hand. The importance of the Chester interests in this line of production is indicated by the fact that three of the five members of the manufacturers' committee which co-operated with the railroad motive power departments and the locomotive companies in preparing specifications for steel engine frames were Chester men—S. A. Watson of the American Steel Foundries, Felton Bent of the Solid Steel Casting Company and W. S. Bickley, manager of the Penn Steel Casting & Machine Company. Shipyard work has been more plentiful also in the past six months, though for many months previous this at one time important dependence of some of the Chester works was very little in evidence.

The Chester Steel Castings Company.

The Chester Steel Castings Company has made improvements in the past few months that will add considerably to its output. In open-hearth steel castings the company has made an increase of about 50 per cent. in four months. In December the open-hearth product was 872,000 pounds; in January it is expected to reach 1,100,000 pounds. In addition are the castings this company produces by the McHaffie process. The improvements completed in 1905 include a new core shop and an addition to the chipping and cleaning room. There were added also a considerable number of new flasks. In the coming year the company will add 100 feet to its open hearth foundry, half of which will be devoted to open-hearth molding and the remainder to the chipping and cleaning department.

Effective Cost and Order System.

During the past few months the Chester Steel Castings Company has been engaged in introducing a new system of management which has resulted in a considerable increase in output and a great improvement in the quality of the product. One important feature of this system is that it enables the office to know at all times the exact condition of the work in the shop, which aids very much in keeping promises. Each job as it comes in is assigned to a molder and an accurate balance is kept of the work ahead of each man. This enables promises to be made much more intelligently than is usual in steel foundries. A complete list is kept of the work to be molded and that to be shipped each day, and if the work is not done as laid out the fact comes automatically to the attention of the office.

As orders for castings come in, sketches are made for shop use. These are gone over carefully by a man charged especially with the work of indicating the position of risers and whose memoranda are to be followed exactly by the molder. The name of the molder who is to do the work is noted on the back of the sketch and an estimate is also noted of the time likely to be required to make the mold. A blank book prepared for the purpose contains the names of all molders at the tops of the pages and in spaces opposite the days of the month, running down the left hand margin of the page, are put under each name, check marks indicating the number of days ahead each man is likely to be employed on the work he has in hand. This indicates at a glance who will be first available for the latest work coming into the shop. The sketch slips are placed in racks in the foundry. In an adjoining rack in pockets, one for each

molder, the workman, after finishing the mold on which he has been engaged, finds an order slip bearing a number corresponding to that on the sketch. He then goes to the other rack and finds the sketch, together with a memorandum of the pattern rack in which his pattern will be found, the latter being designated by a symbol under a very convenient symbol system employed throughout the plant. The distribution of supplies and their definite charging up against work as it goes out are facilitated by dividing the molding floor into classes. For example, classes 1 and 2 take in castings between 800 and 4000 pounds. There are six classes. All sand or supplies furnished to each section of the floor—each section having its own receptacle—are charged against that section. The office work on shop orders is done by the timekeeper and the cost clerk. Each molder deposits his day's card in a rack adjoining the office, as he leaves at night. From this card the timekeeper enters up not time, but the amount of wage for the day. The total wage earnings represented by these work cards is made up for each day. The cards then go the cost clerk, who distributes the labor cost represented thereon among the various jobs then going through the foundry, each of which appears on his books identified by the same symbol that appears on the shop order cards. The total of the labor charges so apportioned by the cost clerk for each day must agree with the day's total as made up by the timekeeper. A simple and effective system that is worthy of note is followed in the keeping and giving out of supplies. The storekeeper has a record of the maximum and minimum stock to be carried of each line of supplies. All stocks are in double supply, two bins being provided in each case. When the last article has been taken from No. 1 bin for use in the shop, that is the signal for re-ordering, so that as No. 2 bin is being drawn upon No. 1 bin will receive a full new stock. The method provides against running out of supplies and the interest on the investment required for duplicate stock is found to be saved many times over by the insurance against interruptions of work due to lack of supplies.

The Seaboard Steel Casting Company.

The Seaboard Steel Casting Company's foundry was the last but one to be added to the list of Chester plants, having now been in operation about five years. S. E. Sproul is general superintendent. There are three acid open-hearth furnaces, one of twenty-five and two of twenty tons capacity. With a foundry 500 feet long, and the chipping, cleaning and machining departments contained in an L off the main building, and with completely modern equipment the company has been able to make a large output. A special line of work that has been followed with good success is the casting of lead desilverizing pots which have proved to have a much longer life than the cast iron pots in general use. Pots for chemical works have also been cast in steel at this plant and experience has shown that they resist well the effects of alternate contraction and expansion which cause cast iron pots to crack in service.

The Solid Steel Casting Company.

The increased capacity provided by the Solid Steel Casting Company in the past year is fully employed at present and promises to be for some months to come. The Eureka Cast Steel Company, which the present company, representing Pennsylvania Steel Company interests succeeded in 1899, made castings by the McHaffie cupola process, as well as from open-hearth steel. Only acid open-hearth steel castings are now made, five heats in 24 hours being secured from two 20-ton furnaces. The company has specialized in the manufacture of engine frames and general locomotive castings and has been very successful in that line. Operations are directly in charge of President Felton Bent.

American Steel Foundries.

The Thurlow plant of the American Steel Foundries, S. A. Watson manager, has made very extensive improvements in its open-hearth plant in the past year, including additional crane service, a new furnace, the installation of a charging machine of the overhead type, new annealing ovens, and the provision of increased molding floor space and chipping and cleaning room. Some exceptionally large castings have been shipped in recent months, including pier blocks for the Blackwell's Island bridge. Thirty-two of these castings have been furnished by the company, the largest weighing 90,760 pounds, and the last of the order has been going through the Thurlow foundry recently. Among marine work shipped last month is a propeller wheel for Newport News, measuring 17 feet in diameter. Shipment was also made of some large shaft hangers, stem and stern posts and bed plates. The company has done considerable work in nickel steel castings containing 3¼ to 3½ per cent. nickel. Specifications for some of these have called for 108,000 to 109,000 pounds tensile strength, 59,000 pounds elastic limit, elongation of 22 per cent. in an 8-inch specimen and reduction of area of 25 per cent.

Pacific Coast Trade Conditions.

SAN FRANCISCO CAL., January 24, 1906.—The importations at this port of pig iron from foreign countries during 1905 were comparatively light, only 13,415 tons. Most of this was from Great Britain. The consumption of pig and scrap for the year was a fair average—about 25,000 tons of the former—so that about half of the pig iron sold in this market during the year was of domestic production. Consumers here were favored with fairly low prices. The year closed with an average stock on hand. The price of foreign at present may be given at $25 to $27. The freight from the East averages about $12.50 per ton. To compete with the English importation nothing higher than $14 to $15 at furnace can be paid for Southern, although the quantity of pig iron consumed has increased compared with the time when it was nearly all of foreign importation.

There is a lull at present in manufacturing circles, but we may expect better things later on in the year. There is no doubt that the local trade suffered a good deal from the Russo-Japanese war. Previous to that we were beginning to ship considerable machinery to Northern Korea, where Americans had a mining concession. Nothing of that has been heard of since the war began. Then some of our hardware houses had been supplying machinery and supplies to Southern Manchuria and the war put a stop to that, too. When the status of Manchuria and Korea has been finally settled by the Japanese there will be a chance to work these fields. But as Japan is ambitious to have the trade of Manchuria and Korea both, it is easy to see that our manufacturers and merchants will find innumerable obstacles in the way. No doubt the demand for machinery, locomotives and merchant iron and steel will not only keep up but will increase. This, however, will be no direct benefit to the Pacific Coast.

The outlook for crops and business for the coming year appears to be good. There is a fair average area of land under cereals, and the heavy rains of the past week will encourage farmers to plant more. The rains came just in time to save the country.

The figures of the Clearing House exchanges for San Francisco for 1905 were $300,000,000 over those of 1904, or 20 per cent. greater; this represents the growth of business and the increase in capital in all the northern portion of the State for the year. Los Angeles, too, has kept well to the front in the race.

The figures of the production of oil for the year were in round numbers 7,000,000 barrels over those of 1904, the total yield being in round numbers 37,000,000 barrels. This is a further testimony to the increase in the prosperity of the State and somewhat of a surprise to those who looked for a very slight increase for the year.

The Coptic on January 11 had locomotives valued at $28,000 for Japan, besides a large amount of machinery of different kinds. The exports by the last Australian steamer, the Venturia, included about $10,000 worth of machinery to Australia and New Zealand. J. O. L.

Projected Subway Lines in Greater New York.

Nineteen Routes Planned to Complete Present System.

BY S. D. V. BURR.

The plans of the Rapid Transit Commission, as sent to the Board of Estimate and Apportionment for approval, contemplate 19 different routes. These lines will not be constructed simultaneously, because the cost would be beyond the borrowing capacity of the city; but some of them are so urgently needed to relieve the present congested condition of the lower section of the city that it is probable that the most important will be started during the present year.

As the law now stands the city cannot incur indebtedness in excess of 10 per cent. of the assessed valuation of its real estate; and as the entire scheme as now laid out calls for an expenditure in the neighborhood of $200,000,000 it is impossible for the city to do the work in one contract. It is necessary, therefore, to divide the undertaking. It may be assumed that the first lines built will be those reaching the district south of Chambers street, where the need is most pressing, and complete the others as they may be required and as the financial situation will permit.

Evolution of Rapid Transit Law.

The evolution of the rapid transit law of New York is a most interesting study. The first legal attempt to solve the rapid transit problem was the act creating the commission of 1875. That board was empowered to select routes, draw plans and specifications, and sell the privilege of building the road on the most advantageous terms, or, failing to do this, organize a company for carrying forward the construction. Attempts to sell the franchise were unsuccessful, so a corporation was formed to build the road. But people were lukewarm in supporting the project and financiers were timid about the returns to be derived from such a vast outlay of capital. In those days nothing was accomplished, excepting the granting of the right to extend the elevated roads to the Harlem River.

The city as a corporate body did nothing further until the passage of the act of 1891. The commission created by that law had much more extended powers than the former one, and at first it was thought would be successful in providing the relief wanted. All efforts had been directed toward lessening the traffic evils existing in the financial district. The troubles there had been multiplying with great rapidity and the transportation lines serving the district had become crowded to excess. The introduction of the skyscraper and the rapidity with which it spread over the section was largely responsible for the overcrowded state. This fact will be appreciated from the statement that the skyscrapers increased the ground capacity over ten times. Almost all the old buildings had been three, four and five story structures, having a very limited office space. As fast as these were torn down and modern office buildings erected on their sites new members were added to the human hive without providing increased facilities for traveling to and from the district. The only transportation accommodations were those furnished by the Brooklyn Bridge, the four lines of elevated roads running north, and the ferries to Brooklyn and to the railroads terminating in Jersey. All consideration of the surface lines can properly be omitted, since they were local conveniences and much too slow to form part of any rapid transit scheme.

The new commission adopted routes, drew complete plans and specifications, and during the latter part of 1892 advertised the franchise for sale. A provision of the law demanded that the bidder deposit a cash bond of $1,000,000 as security for the faithful performance of the contract. Only one bid of $1000 was received. This proposition was rejected, as the bidder failed to convince the commission of his ability to carry out the terms of the contract.

The commission was now in the position of having something to sell that nobody wanted. The road would cost over $30,000,000 and money interests could not see any adequate return upon an investment of this magnitude. They therefore stood aloof from the project. Another drawback was that in those days engineers were divided as to the possibility of overcoming the engineering difficulties that were bound to be encountered. This consideration and the financial doubt frightened those who might have assumed the task.

Attempts Balked by Manhattan and Metropolitan Companies.

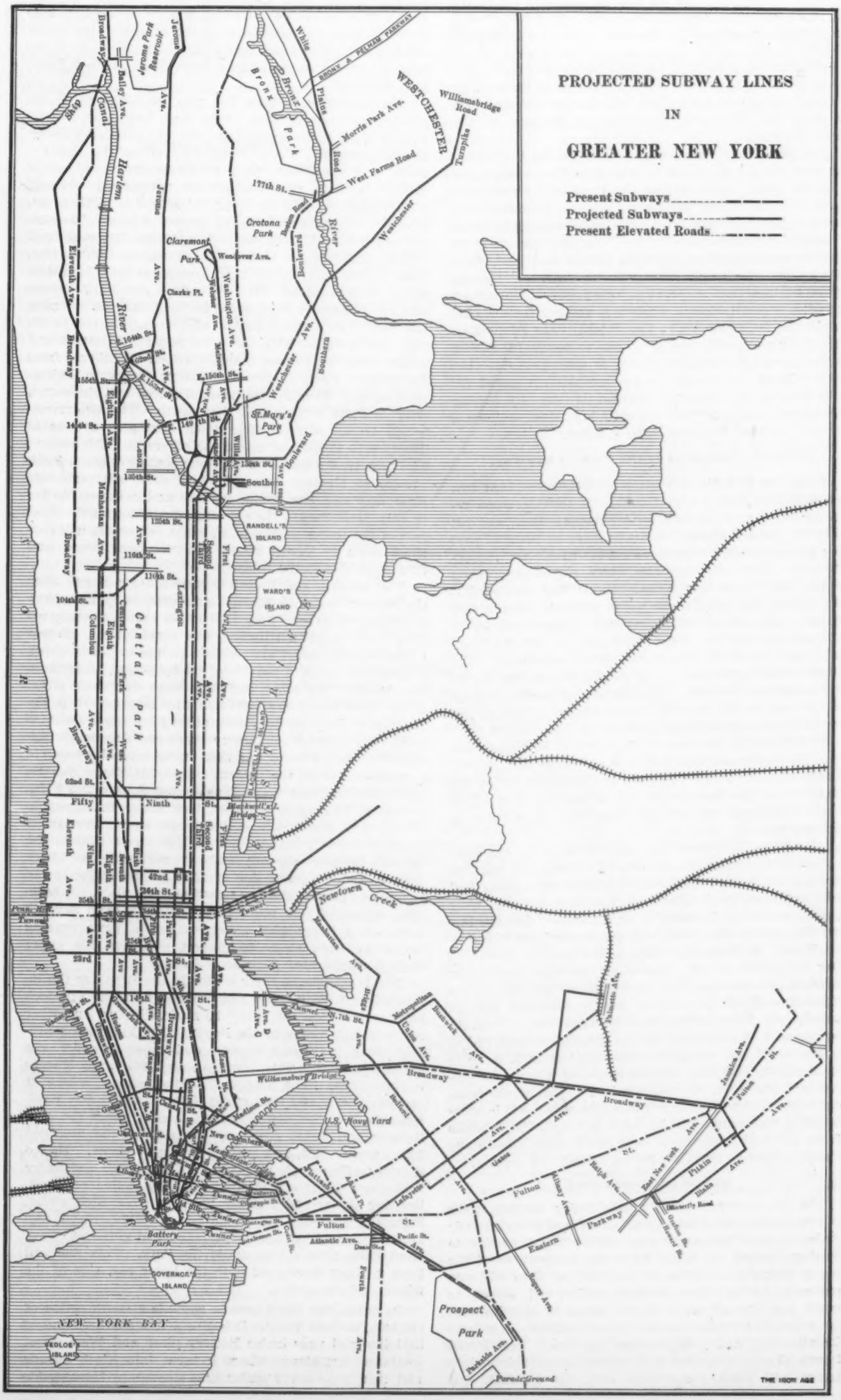
But more potent influences than these were at work against the scheme. Both the Manhattan and Metropolitan interests were anxious for more extended privileges. The first controlled the elevated lines and the second the surface lines of the city. Logically, it was the province of the elevated roads to relieve the situation by increasing their facilities. The company had four lines in operation and the work of extending them and increasing their carrying capacity could have been done at an expenditure by no means prohibitive. All of the lines were taxed beyond their capacity and relief of some sort had to be provided.

The Rapid Transit Commission of 1891 had repeatedly manifested its desire to treat the roads justly and as far as lay in its power permit them to extend their systems. But no agreement was ever reached, and the reason is not far to seek. The Manhattan Company was not willing to pay anything like a reasonable price for the franchise and the commission was firm in its determination not to grant such a valuable concession for a merely nominal sum. For two years there was almost constant interchange of propositions between the two interests, but without agreement. Had the elevated company accepted the offer and paid a fair rental, the rapid transit facilities of New York would have been placed in their control for all time, and no rapid transit scheme inaugurated by the city would have been possible. The opportunity came and was lost.

Both the Manhattan and Metropolitan companies were seemingly actuated by the same conviction. They knew that for over fifteen years all attempts on the part of the city to build, or to get others to build, rapid transit roads had been abortive. All plans and projects had failed. The demand for relief was present and was growing in intensity. Therefore, as they were in position to provide the solution, they would wait, and the clamor would finally reach such a stage that the city would be compelled to agree to such terms as they might see fit to propose. During the whole time of the controversy the commission found it impossible to enlist any outside financial interest. The plans proposed by the commission were continually blocked by announcements by one or the other of the companies of what it intended to do; and as long as either company seemed about to extend its system no outside interest would dare to appear in opposition.

Present Rapid Transit Law.

This state of affairs continued until the spring of 1894, when the present Rapid Transit Commission came into power under a new law that had been drawn by the Chamber of Commerce along lines proposed by the late Abram S. Hewitt. The keynote of the act was that the city should lend its credit to the one undertaking the work. Bonds were to be issued for this purpose. The interest on these bonds was to be paid by the contractor, who was also to pay one per cent. additional as a sinking fund. The contractor was to furnish a cash deposit of $1,000,000 and security to the amount of $5,000,000 for faithful performance. He was also required to furnish the entire equipment of the road and to operate it for a


PROJECTED SUBWAY LINES
IN
GREATER NEW YORK
Present Subways
Projected Subways
Present Elevated Roads
Broadway
Jerome Park Reservoir
Jerome Ave.
Bailey Ave.
Ship Canal
Harlem River
Broadway
Eleventh Ave.
Eighth Ave.
Manhattan Ave.
Columbus Ave.
Central Park West
Central Park
Lenox Ave.
Lexington Ave.
Second Ave.
Third Ave.
Fifth Ave.
Broadway
Fifty Ninth St.
Eleventh Ninth Seventh Sixth Fifth Ave.
59th St.
42nd St.
34th St.
23rd St.
14th St.
Canal St.
Broadway
Greenwich St.
Church St.
Broadway
Park Place
Broadway
Nassau St.
Fulton St.
Broadway
Bowling Green
Battery Park
Tunnel
Old Slip
Montague St.
Clark St.
Joralemon St.
Tunnel
Tunnel
Tunnel

period of fifty years. At the end of that time the entire road and equipment reverts to the city; its operation and maintenance will then be disposed of for an additional period.

This provided for the construction of the road with funds obtained at a lower rate of interest than could be obtained by private individuals or corporations, and also provided for the ample protection of the city by the bonds required.

Two bids were presented and that of John B. McDonald accepted for $35,000,000. The New York subway as it stands to-day represents an outlay of over $60,000,000. In order to make the investment pay the principal and interest of this amount must be collected during 50 years of operation from five-cent fares. In addition the road must be kept in perfect condition during that time. The subway has been open a little over one year, and judging by the business so far done the investment will prove an exceedingly profitable one. There is another feature that should not be overlooked. The subway was adopted so quickly by the people and has been so successful during its first year of operation, that it is quite probable that there will be some competition when bids are asked for extensions to the system. Instead of the city having something to sell that no one will buy, there will be a demand for the privileges to be granted.

Proposed Additions to the Present Subway.

From the first the present commission has kept two considerations constantly in mind—to provide some relief for the congestion in the least possible time, and yet make the plans adopted for this purpose an integral part of a comprehensive scheme of rapid transit for the entire city. The fact that the whole city was growing rapidly was taken into consideration; that communication would soon have to be made with all the outlying districts, and that any plan that only proposed to furnish traffic accommodations for a single section, like the financial district, would confuse all future endeavors. The fact was also appreciated that local methods that would eventually require to be rebuilt and redesigned at no very distant day would be vastly more expensive than an entire system capable of being constructed as needed.

The extent of the work planned will be understood from the accompanying map. This shows the present subway, the elevated roads and the lines projected by the commission. In the thickly settled sections the routes are all in tunnel, elevated structures being introduced in the outskirts.

All of the lines have been decided upon by the commission and submitted to the Board of Estimate and Apportionment for its approval. Formerly the plans had to be approved by the Board of Aldermen, but that body proved so dilatory in reaching an agreement that the law was changed in May, 1905, and the power transferred to the Board of Estimate. This board has no power to alter the plans—it can approve or condemn, but cannot originate or substitute; that power is vested alone in the Rapid Transit Board. After having obtained the approval of the Board of Estimate the next step is to obtain the consents of a majority of the property owners facing the route. If this cannot be done, application is made to the Appellate Division of the Supreme Court, the approval of which may be taken in lieu of that of the property holders. In the case of the routes adopted it is probable that no attempt will be made to obtain the consents of the property owners, as it is much more expeditious to apply direct to the court for its substituted consent.

Routes in Manhattan.

The Third avenue route passes under Harlem River by two tunnels at about 128th street and then extends southerly as a four-track road under Third avenue to Chatham Square, at which point the narrowness of the streets compels a division of the tracks. Two will run southerly through New Bowery and Pearl street to Broad and thence under South street to the Battery. The other two tracks will pass under Park Row and Nassau street and join the first at Pearl and Broad streets. Two spurs through Thirty-fifth and Thirty-sixth streets will form connections with the Seventh and Eighth avenue line. North of the river will be two double track roads, one of which will terminate in a loop at 142d street and connect with the proposed line under 138th street. The other pair of tracks will run to a terminus in the yards of the New York, New Haven & Hartford Railroad.

The Lexington avenue line may be described as beginning near Forty-third street and Lexington avenue with a short spur connecting with the existing subway at Park avenue. From Forty-third street the line extends as a four-track road to 129th street, where it divides to form two double-track extensions. One of these will pass under the river and extend to 149th street, where it will connect with the present subway. The second extension will pass under the Harlem River to Park avenue and continue under that avenue to 156th street, from which point a northerly extension may be easily made when required. At 149th street and Park avenue another divergence is proposed to carry two tracks under the New York Central yards, with a loop in the yards, and then parallel with the river along 153d street and under Sedgwick avenue to 164th street. Southerly from Forty-third street there will be four tracks to Thirty-sixth street. The two south-bound tracks will there turn west to Fifth avenue and then south. The two north-bound tracks will continue down Lexington avenue to Thirty-fifth street and rejoin the others in Fifth avenue. The four tracks will then continue southerly along Fifth avenue to Madison Square, where they will turn into Broadway and run south, passing under Union Square to City Hall Park. Here a single-track loop will allow part of the trains to turn back, while two tracks will continue down to Vesey street and through Vesey and Church streets to the Battery.

The Seventh and Eighth avenue route will run from the Battery under Greenwich street and West Broadway to Chambers street. Two alternative routes are planned from this point northerly. The most direct extends under Hudson street and Eighth avenue to 154th street, from which point a northerly extension can be built in the future. The other line runs from Chambers street under West Broadway to Washington Square, where the line again diverges into two alternative ones. One of these runs under Washington Square and Greenwich avenue to Seventh avenue, and then under Seventh avenue to a connection with the present subway at Times Square. The other line runs under Washington Square and Fifth avenue to Twenty-third street, then under Broadway to Twenty-fifth street, where it diverges again, two tracks running westerly under Twenty-fifth street to join the Seventh avenue subway and so northerly to Times Square, and the main line running on under Broadway to join the present subway near the same place. A separate section of this route runs northerly from Seventh avenue and Forty-third street to Central Park, curving under the Park so as to connect with the line under Eighth avenue near Fifty-second street.

The First avenue route begins in the Bronx at the intersection of 138th street and Alexander avenue, at which point connections can easily be made with various other rapid transit routes in the Bronx. The line runs southerly along Alexander avenue, and passing under the Harlem turns into First avenue near 124th street. Thence it runs under First avenue to First street, where it curves easterly and runs under Essex, Rutgers and Madison streets to the New Bowery. It runs under the New Bowery and Pearl street by the side of the proposed Third avenue line, to a point near Dover street. Thence it runs under private property to Water street and under Water to Pine street. It then runs under Beaver street, Bowling Green and Battery place to Greenwich street. From the northerly end of the line at 138th street a separate section will run under Alexander avenue and Claremont Park, with a loop under the Park. This line will form a direct connection with the lower east side of the island and the Bronx.

In effect, the Ninth avenue route is a continuation of the one just mentioned. It begins at the southern end of that line and runs under Battery place and West street to Gansevoort street, where it turns into Ninth avenue and then runs north under that avenue to Morningside

Park and thence as an underground road to Amsterdam avenue at about 211th street.

The commission believes that the routes described above are all the north and south ones that can be wisely planned at the present time. They would provide ample accommodation between the business portions of the city and the region north of the Harlem River. They would all be in subway.

Routes in the Bronx.

Five lines are proposed for the Bronx. The first is a four-track subway running through Jerome avenue from 164th street to the junction of Woodlawn road opposite Woodlawn Cemetery. From the southerly end two connections are provided with railways in Manhattan. One is a three-track road leading to the bridge over the Harlem River belonging to the Putnam Division of the New York Central; the other a two-track subway passing under the Harlem River to a point in Eighth avenue near 154th street, so as to connect with a subway to be built under that avenue. A third spur is planned to connect with 153d street near Cromwell avenue, so as to join with the proposed Lexington avenue subway.

Another line consists of a three-track elevated road running from Jerome avenue, near its intersection with Clarke place, to the junction of Jerome avenue with Woodlawn road. Connection is to be made with the Jerome avenue subway and also with the Gerard avenue subway mentioned below.

The Gerard avenue subway begins at 138th street and Third avenue, where connection can be made with several other lines, and runs west through 138th street and Gerard avenue to Jerome avenue near its intersection with Clarke place. At this point connection can be made with either the Jerome avenue subway or elevated.

The line designated as the White Plains road is practically an extension of the present rapid transit elevated viaduct. It will begin at 177th street and West Farms road near Bronx Park, and extend as a three-track elevated road along West Farms road, Morris Park avenue and White Plains road to the village of Wakefield.

The Westchester avenue line begins at Third avenue and 138th street, at which point connections may be made with the other subways, and runs east under 138th street to the Southern Boulevard. At that point it emerges from the ground and continues as a three-track elevated road on the Southern Boulevard and Westchester avenue to the village of Westchester.

The five routes just described form a comprehensive system for the Bronx. The first three are of value chiefly as extensions of routes either embraced in the present plans or to be built in the future.

Routes in Brooklyn.

In laying out the routes in Brooklyn attention was paid to the requirements of that Borough and its relation to the different sections of New York. Provision has been made for reaching both the uptown and downtown portions of New York from all parts of Brooklyn, and advantage has been taken of the bridges built and to be built.

The Thirty-fourth street line runs through Thirty-fourth street, in Manhattan, from the East River to the Hudson, passing under the present subway and at a sufficient depth under the proposed north and south avenue lines to permit other subways to be constructed over it. It will have no track connections with any rapid transit system in Manhattan, but it is expected that joint stations will be placed at intersections. A part of this line diverges between Second and Third avenues and passes under the East River to Long Island City, the terminus being in Jackson avenue, near Borden avenue. There will be four tracks in Manhattan and two under the river. This route reaches important points in Manhattan, such as the new Pennsylvania railroad station, Herald Square and the nearby stores and theatres and the East Thirty-fourth street ferry. In Brooklyn it will permit passengers by any of the steam or trolley lines now coming to the ferry to get to New York with only one change; and it will carry them without change to transfer stations for any of the north or south side roads, and thus reach any part of the city.

Brooklyn and Manhattan Loop Lines.

The system now to be considered begins in East New York at the eastern extremity of Broadway and runs through that street and across the Williamsburg Bridge to New York. It then extends south to a series of tunnels between the Brooklyn Bridge and the Battery, which lead the line back to the Brooklyn City Hall Park, and thence easterly along Lafayette and Gates avenues back to Broadway. In addition, a line running north and south through Bedford avenue from the Williamsburg Bridge plaza to the Eastern Parkway serves the purpose of an interior loop.

The route in New York from the Williamsburg Bridge passes underground in Delancey street near Norfolk, and then runs west under the former street to the Bowery, and under the proposed extension of Delancey street to the corner of Centre and Grand streets. The line then continues southerly through Centre and William streets.

Provision is made for three tunnels, which may be considered as the Old Slip tunnel, the Maiden lane tunnel and the Beekman street tunnel. The line of the Old Slip tunnel is under William street, Exchange place and Beaver street in New York and under Montague street in Brooklyn. The Maiden lane tunnel begins at the corner of William and Liberty streets and then passes under Maiden lane in New York and Pineapple street in Brooklyn. The last tunnel passes under Beekman street in New York and Cranberry street in Brooklyn.

These tunnels all meet at the Brooklyn City Hall Park. From that point one line runs under Willoughby street, the Flatbush avenue extension, Fulton street and Lafayette avenue to its intersection with Bedford avenue. From this point one line passes out Lafayette avenue to Stuyvesant avenue. Another line runs through Bedford and Gates avenues to Broadway. Several spurs form a part of this system. The longest begins at Grand and Centre streets, New York, and runs west under Grand and Desbrosses streets to the Desbrosses street ferry and intersects all the north and south lines of travel in New York. Another spur connects, by means of a line under Canal street, with the Manhattan end of the Manhattan Bridge. A third connects with the City Hall loop of the present subway by a line under Beekman street.

The construction of this system will relieve the pressure of the Brooklyn Bridge and will utilize the full capacity of the Williamsburgh Bridge. It will bring all parts of New York south of Houston street within reach of the East New York, Williamsburgh, and Lafayette and Bedford avenue districts of Brooklyn, and also afford opportunity for transfers to the north and south lines in New York.

Other Routes in Brooklyn.

The Fourth avenue line extends from Fort Hamilton through Fourth avenue to Flatbush, where connection will be made with the subway now under construction; connection will also be made with the New York loop lines just mentioned.

The Manhattan Bridge line will occupy mainly that and the Brooklyn Bridge. There will be a connection under the Flatbush avenue extension with the subway now under way, at the junction of Flatbush avenue and Fulton street; also connection with the loop line running easterly under Fulton street and Lafayette avenue.

The Eastern Parkway line will run from the Prospect Park Plaza under the Eastern Parkway to East New York avenue, near which point a loop will begin running out by Howard, Hunterfly, Blake and Georgia avenues and returning by Pitkin avenue. An extension is provided to run from the Plaza along Flatbush avenue to Atlantic and there connect with the route to Court street and the City Hall Park.

The Brooklyn, Manhattan and Long Island City system consists of two lines. One runs from the Williamsburgh to the Blackwell's Island Bridge and the other from Williamsburgh under the East River to Fourteenth street, New York. The route includes two spurs. One runs from the corner of Stuyvesant and Lafayette avenues under the latter, Stanhope street and Cypress avenue to Palmetto street; another, from the junction of Metropolitan avenue and North Seventh street along Union avenue to Broadway.

In connection with this route is another crossing from Greenpoint to Fourteenth street and extending along that street as far as Ninth avenue, where two branches run south. One runs under Ninth avenue, Greenwich and Liberty streets and unites with the Maiden Lane tunnel. The other branch connects at Canal and Centre streets with the Brooklyn and Manhattan loop lines already described. This route forms still another loop through which cars can be run in either direction between New York and Brooklyn.

The Jamaica route begins at East New York avenue and Broadway and runs out under that avenue to Grand street in the village of Jamaica. It will afford direct connection between New York and the Jamaica district.

Brooklyn demanded a different treatment from that of New York. In the latter the main lines all run north and south, while the system in the former had to be a radiating one. This required as its most important feature a series of large loops. As shown by the map, advantage is taken of the East River bridges and they are fully utilized for rapid transit purposes. The Brooklyn plans also call for four lines of tunnels under the river, with a total capacity of ten tracks. Under the East River there are in addition to these the tunnels at Thirty-fourth street and those now being constructed from the Battery. If the plans are all carried out there will be 14 rapid transit tracks under the East River and at least four such tracks over it on the bridges. These tunnels are, of course, independent of those under the Harlem, which are mentioned above.

A Large Hydro-Electric Power Installation in India.

The Government of British India has been commissioning some of the most capable royal engineers to plan for and construct public works, such as would aid in the general advancement of the native industries and the development of the commerce of the country. The first notable project undertaken for the generation and distribution of electricity was the Cauvery power system, located in Mysore State in Southern India, which was completed in 1902. About a year ago its capacity was increased to 7920 kw., making it the largest hydro-electric installation now operating in Southern Asia, if not on the entire continent. Credit for this plant is due especially to Major A. J. de Lotbiniere, deputy chief engineer of the Government of Mysore, who conceived the plan of the installation, successfully arranged for its financing, afterward arranged for the purchase of the electrical and hydraulic equipment and supervised its installation.

The power scheme next to be undertaken will be on the Jhelum River in Kashmir, in Northwest India, near Rampur, about 50 miles below Srinager. A 6-mile conduit will give a head of water at the plant of about 400 feet and the capacity will be about 20,000 horse-power. It is planned to use the power for operating a single-phase electric railroad 180 miles long, the large silk factory at Srinager and for lighting in Srinager, Abbottabad, Murree and Rawalpindi, towns in the British Province of Hazara, lying to the west of Kashmir. Possibly the most important immediate use to which the power will be put will be in operating dredgers for deepening the Jhelum River in the Kashmir Valley, and thus minimize the floods which periodically devastate the country. The plant will also allow the reclamation of a large tract of land and permit storing water in Wular Lake to sell to the Punjab Irrigation Department.

After completing the preliminary arrangements Major de Lotbiniere was instructed to obtain bids upon the machinery and materials for the plant. He inspected works of the leading hydraulic and electric manufacturers in Europe and America, and after a careful investigation recommended that the contracts for the entire equipment be placed with firms in the United States. The contract for the hydraulic equipment was awarded to the Abner Doble Company, San Francisco, and calls for the hydraulic plant complete from the forebay to the tail race.

The gravity conduit line for the power plant will be approximately 34,000 feet long and for the upper 8500 feet will consist of an excavated ditch lined with masonry. The remainder will consist of a rectangular flume or a wooden stave pipe such as has been installed so successfully on the Pacific Coast. The flume will have a capacity of over 500 cubic feet per second. The forebay at the end of the gravity line and at the head of the pressure pipes will be constructed of masonry and will be provided with special head gates. The pressure lines will be riveted steel pipes of a factor of safety of five, each supplying one of the hydro-electric units. A standpipe and two special vacuum valves will be provided to protect each pipe line against injury in case the water should be drawn out suddenly. The last length of each pressure pipe will terminate in a flange, which will be bolted to a massive cast iron thrust block resting on a heavy cast iron sole plate. The latter will be mounted on a masonry foundation and held in position by anchor bolts. This fitting will be designed to take the hydraulic thrust of the pipe, an ample factor of safety being allowed, so that there will be no strain on the branch piping in the interior of the power house. Each pressure line will consist of a pipe varying in diameter from 30 to 36 inches and a 54 to 36 inch taper pipe, 10 feet long, at the upper end. The pipes will be 790 feet long and will deliver the water under an effective head of 400 feet. The interior piping of the power house will consist of welded pipe with welded flanges, all piping and fittings beyond the thrust block being designed with a factor of safety of 10 and subjected to a test pressure of one and a half times the working pressure for five hours.

Twelve main units and three exciter units will be installed in the power house. Each main unit will consist of a Doble tangential water wheel with automatic oil pressure governor of 1765 brake horse-power, direct connected to a 1000-kw. alternator, the speed of the unit being 500 revolutions per minute. The exciter units will include Doble water wheels of 285 brake horse-power and will also run at 500 revolutions per minute. The large units will be of the two-bearing type, with the wheel runner fastened on the end of the shaft. The exciter water wheel runners will be mounted on the extended ends of the exciter generator shafts. The water wheels will be equipped with ellipsoidal buckets, needle regulating nozzles and centrifugal water guards. The regulation of the main units will be effected by hydraulic governors operating jet deflectors. For the exciter units will be regulated by hand through the needle nozzles. The gate valves for each wheel will be of special construction with outside screw and yoke, bronze mounted, with by-pass. Two traveling cranes will be installed for handling the machinery. The transformers will be placed in a bay of the main building or in a separate structure.

The conditions under which the plant will be installed are out of the ordinary. The specifications for the electrical and hydraulic equipment stipulated that no single piece of machinery should weigh more than four tons when packed, as there will be 200 miles of road transportation by bullock carts, including a lift over a range of mountains 8000 feet high. Portland cement costs $7.50 per barrel delivered at the site, making its use prohibitive for heavy concrete work. However, there is plenty of natural rock in the vicinity, so masonry construction will be used for the walls of the power house and for the foundations of machines, intake, forebay, &c.

The entire hydro-electric installation will be constructed, erected, tested and placed in operation under the supervision of Major A. J. de Lotbiniere, and Major D. Fraser and Captain Thompson will act as his engineering representatives in London. A. C. Jewett, formerly of the General Electric Company, who was connected with the installation of the Cauvery plant, will serve as installing engineer for the Government.

The Osgood Bradley & Sons Company, Worcester, Mass., car builder, announces that it will not enter the combination of street car manufacturers and will continue as an independent business.

A New Cincinnati Shaper.

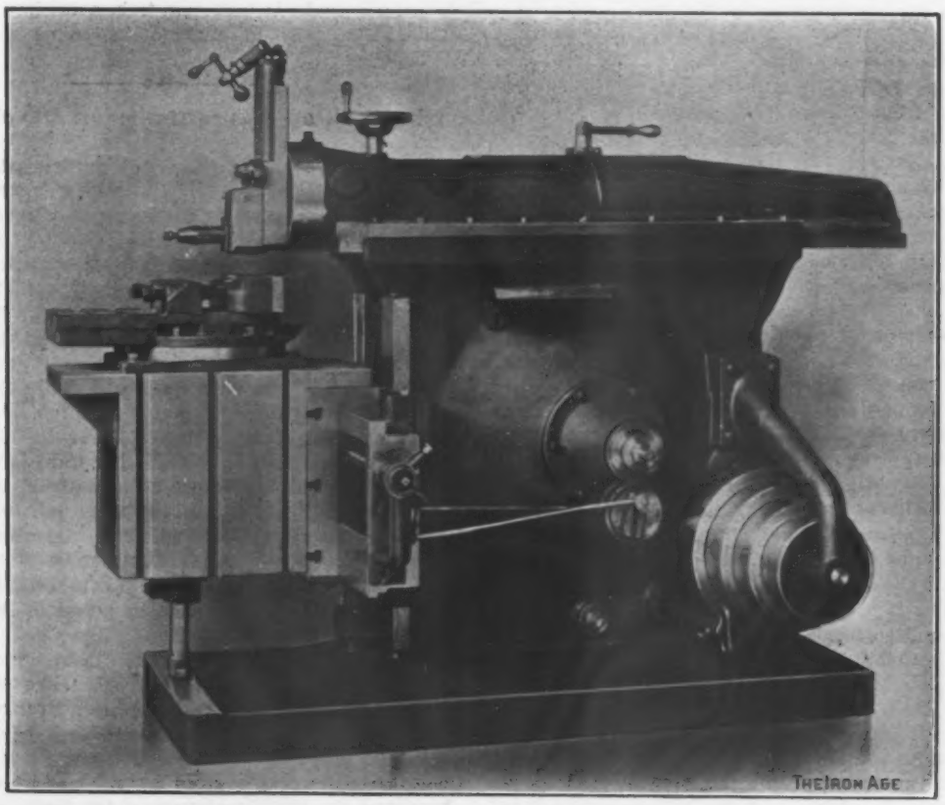
For its stroke the new 32-inch heavy duty railroad and manufacturing shaper built by the Cincinnati Shaper Company, Cincinnati, is claimed to be the most powerful on the market. To this end strength has been added not to the gearing alone, but all parts subject to excessive strains have been correspondingly proportioned and shaped to afford the necessary rigidity. An unusual width and depth is to be noticed in the column, which is ribbed and braced internally and is of a peculiar strain resisting form. At the top the front and rear horns project more than the usual amount to offer a longer bearing for the ram. The ram has a wide bearing in the column and is of a form that in the experience of the builder has proved to be the best.

The head swivels to any angle, is graduated and has a simple and effective locking device. The down feed screw is operated through bevel gears and a ball handle deflected downward to be within easy reach of the operator. It has a graduated collar which reads 0.001 inch. The usual arrangement for key seating shafts or similar work is made by providing a 4-inch opening through the column under the ram. The length of the stroke is changed from the working side of the machine and its position by means of a hand wheel on top of the ram. Both of these changes can be made while the machine is running or at rest.

The cross rail supporting the work table has horizontal ribs and is securely gibbed to the column. The table is fed horizontally by a cross traverse screw provided with a graduated collar reading to 0.001 inch. A variable automatic feed from nothing to the maximum may be obtained while the machine is running. The cross feed connecting rod is automatically adjustable to any height of the rail and does not depend upon frictional contact. The outer end of the table is supported by an adjustable column, the lower end of which has a roller running on a planed way on the extended base which is parallel with the travel of the table. Under the table elevating screw, which is of telescopic form requiring no hole in the floor, ball bearings are provided. The vise is of double screw form, has a graduated swiveling base, and will clamp straight or tapering pieces with equal facility. Its jaw plates are of annealed tool steel.

The machine may be used either single or back-geared. In the first way, the ratio of gearing is 7.2 revolutions of the cone shaft to one stroke of the ram, and in the other, 30 to 1. This is stated to be the highest ratio of any machine of this stroke made. A special bearing is provided for the main gear. To overcome any tendency for the shaft to break at the junction of the gear, its inner end is twice the diameter of the outer end. A third or outer bearing is provided for the cone pulley shaft. The crank block is a steel casting set well into the cup of the gear to bring the rocker arm close to the gear, avoiding the usual overhang. The rocker arm is strong and heavy and has means for taking up wear and providing ample lubrication.

For the ram, head, rail, apron and crank wheel slides there are full length tapered gibs, adjustable endwise by single screws. Continuous metal contact is thus obtained on both sides of the gib, which is not the case where set screws impinge with various pressures at several points in the length of the gib.



The New 32-Inch Heavy Duty Railroad and Manufacturing Shaper, Built by the Cincinnati Shaper Company.

The following are among the principal dimensions of the shaper:

Extreme length of stroke	33 inches.
Greatest distance, table to ram	17¼ inches.
Least distance, table to ram	2¼ inches.
Vertical adjustment of table	15 inches.
Horizontal adjustment of table	32 inches.
Feed adjustment of head	10 inches.
Table surface	30 x 16 inches.
Ram bearing	46 x 13 inches.
Ram speeds	8
Cutting strokes per minute	6 to 71
Weight, including countershaft	6300 pounds.

The materials of which the machine is constructed are carefully chosen for the service required of them. The shafts are of high point carbon steel, ground to size and all shaft bearings are long and well braced in the column. Gears and T slots are cut from the solid. All flat sliding surfaces and the surfaces between the apron and table are scraped. Pinions are of cast steel and bevel gears are cut from the solid. As extras or accessory equipment the shaper may be furnished with power down feed, revolving table, tilting table, tilting top for table, cone arbors, concave attachment and mold

maker's vises. If desired motor drive or change gear boxes may be substituted for the cone pulley.

Manufacturing Developments in Canada.

Port Arthur to Get Another Plant.

TORONTO, January 27, 1906.—A preliminary agreement has been entered into between the town of Port Arthur and two men from Boston, Messrs. Hedges and Burleigh, for the establishment in the town of works for the manufacture of tubes, and also works for the manufacture of wire nails. The agreement is of the same character as that into which the town entered with the Atikokan Iron Company. The town will furnish a site of 100 acres, which it has yet to purchase; it will take $100,000 of the company's bonds at par; it will have three representatives on the Board of Directors; and it will appoint the company's treasurer. On their part the promoters contract to erect boiler, tube and pipe mills costing $750,000; to begin work on the mills three months after the agreement is ratified by the rate payers; to make the works of 1000-tons monthly capacity; and to employ 250 men from the beginning. The plant is to be operated by electricity, requiring from 1500 to 2000 horse-power.

Great works for the development of electric power at the Kakebeka Falls on the Kaministiquia are being constructed by a power company which expects to dispose of its entire current in Port Arthur and Fort William. William Mackenzie, of the Mackenzie & Mann Company, chief proprietor of the Canadian Northern Railway Company, and party to the agreement concerning the Atikokan Iron Company, was in Port Arthur when the Boston men were there. He expressed the hope that Port Arthur would get such an industry, as at present all the tubes required here came from the United States. Mr. Hedges stated that the tube and wire plant would take up the output of the works of the Atikokan Iron Company, evidently meaning that he understood this company would add steel furnaces and rolling mills to its blast furnaces and supply the material for tubes and wire. The tube works, Mr. Hedges said, would be a fac simile of one of the finest plants in the United States.

Port Arthur is a sincere believer in municipal enterprise. As has been mentioned, it supplied a site for the Atikokan Iron Company's works and for the Ore & Coal Dock Company's buildings. It took $100,000 of the Atikokan Iron Company's bonds. It is the owner of its own street railway system, has a municipal telephone service, and expects to have a power plant. It is the most advanced public ownership town in Ontario.

The concrete foundations of the Atikokan Iron Company's blast furnaces have been completed, and the contract for the steel structural work and the machinery has been let. The Canada Foundry Company has secured $200,000 of the equipment and construction work; the Canada Bridge Company, $100,000; the Caledonia Iron Works, Montreal, $20,000. The rest of the contracts were for machinery not made in Canada, and went to United States manufacturers. It is expected that a furnace will be ready to go in blast in August. At the Atikokan mine, whence the ore is to come, the equipment is complete, and the shipping of ore is to commence early in the spring. A spur 6 miles long will at once be run out from the Canadian Northern main line to the mine.

Electric Smelting.

Dr. Haanel, Superintendent of Mines for the Dominion, is visiting the experimental plant at Sault Ste. Marie, where the smelting of iron by electricity is being tested. So far nothing conclusive has been given out in respect to these experiments. Electric smelting was reported by Dr. Haanel to be a great success in Europe, whither he was sent by the Canadian Government as a commissioner to inquire into the matter, but it appears that all the electric furnaces he saw there work on hematite ore. At Sault Ste. Marie the ore used is magnetite. One result achieved is the production of nickel pig by the treatment of nickeliferous pyrrhatite. This appears to have given much satisfaction to Mr. Clerque, but the object for which the small experimental smelter was erected was to smelt iron ore, and this does not seem to have been accomplished yet to the entire satisfaction of the experimenters.

While the issue of the Sault Ste. operations remains uncertain, positive results have been obtained in another quarter. That is to say, metallurgically, the results are satisfactory; what they may be economically it is impossible to say. Several samples of steel smelted directly by the electric furnace process have been sent to the Director of the Ontario Bureau of Mines, Thomas Gibson. J. W. Evans, a mining engineer, of Deseronto, produced these samples from iron ore taken from two mines in Hastings County. Both ores are of a kind extremely hard to treat in the ordinary furnace. The Horton mine, from which some of the ore smelted was taken, has considerable titanium in its deposits, and the contents of the Cole Hill mine, from which the remainder of the ore used was obtained, run high in sulphur. The samples were produced by electricity in about 15 minutes, the pig iron stage being avoided. If the process is successful on a large scale it is certain to be most important, for it will impart value to ores that had come to be regarded as hopeless. C. A. C. J.

Niagara Power Transmission Development.

The Niagara Falls Electrical Transmission Company has made application to the State Gas and Electrical Commission for permission to increase its capital stock from $100,000 to $5,000,000, and also for permission to purchase the obligations of the Albion Power Company and the stock of the Niagara Falls Gas & Electric Light Company. The Niagara Falls Electrical Transmission Company has international capital interested in it, and it will act as the transmission company for the power that is developed in the power station of the Electrical Development Company of Ontario, Limited, located on the Canadian side of the Niagara River in Victoria Park. This latter company, like the other Canadian companies, will be allowed to transmit one-half of its developed power to the United States, the other half to be available for Canadian use on demand. Its transmission line will run from Niagara Falls to Tonawanda, where the main line will branch, one line running to Buffalo, the other eastward to Rochester and other places in the interior of the State.

The Electrical Development Company of Ontario, Limited, is capitalized at $6,000,000. Frederick Nichols, Toronto, Ont., is its president, and Frank A. Dudley, Niagara Falls, N. Y., is vice-president of the Niagara Falls Electrical Transmission Company. Mr. Dudley has most carefully studied the power needs of western New York and the interior section of the State, and he plans to transmit Niagara power so that it will be a great factor in the upbuilding of State industries. Work on the erection of the power house of the Electrical Development Company is progressing. The method of development will be the same as that of the Niagara Falls Power Company, which is with wheel pit and tail race, the turbines and generators being connected by vertical shafts. Power will be available during the summer. It is from this station that the city of Toronto will receive its power supply, the transmission line having already been erected by the Toronto & Niagara Power Company, which is the transmission company for the Canadian side of the river.

The Colonial Steel Company's Enlargements.—The Colonial Steel Company, Pittsburgh, works at Colonia, Pa., has commenced the erection of two 25-ton basic open hearth furnaces, which will be equipped with all modern appliances for economical and rapid production, including overhead cranes, charging machines, &c. Contract for the building to contain these furnaces has been placed with the McClintic-Marshall Construction Company, calling for completion April 15, and it is expected the furnace will be in operation very shortly after that time. The Colonial plant is now equipped with a 26-inch two-high reversing blooming mill, in operation for some time, with ample capacity for taking care of the output of these open hearth furnaces.

A New Magnetic Brake.

To take the place of the band brake or other types of electric brakes operated by a solenoid the Electric Controller & Supply Company, Cleveland, Ohio, has developed the type Q brake illustrated. It is adapted for use on electrically driven machinery of 1 to 100 horse-power and embodies many new and desirable features. In all electrically driven machinery requiring frequent stops and reversals, and particularly in cranes, the facility and speed of handling, and often safety, depend upon the accuracy and reliability of the brake. The braking force of the type Q brake, it is claimed, is always a definite and constant quantity, is applied axially and is balanced within the frame of the brake, allowing no blow or unbalanced thrust on the bearings of the motor. The external appearance of the brake is shown in Fig. 1, and Fig. 2, a cross section, discloses the interior construction.

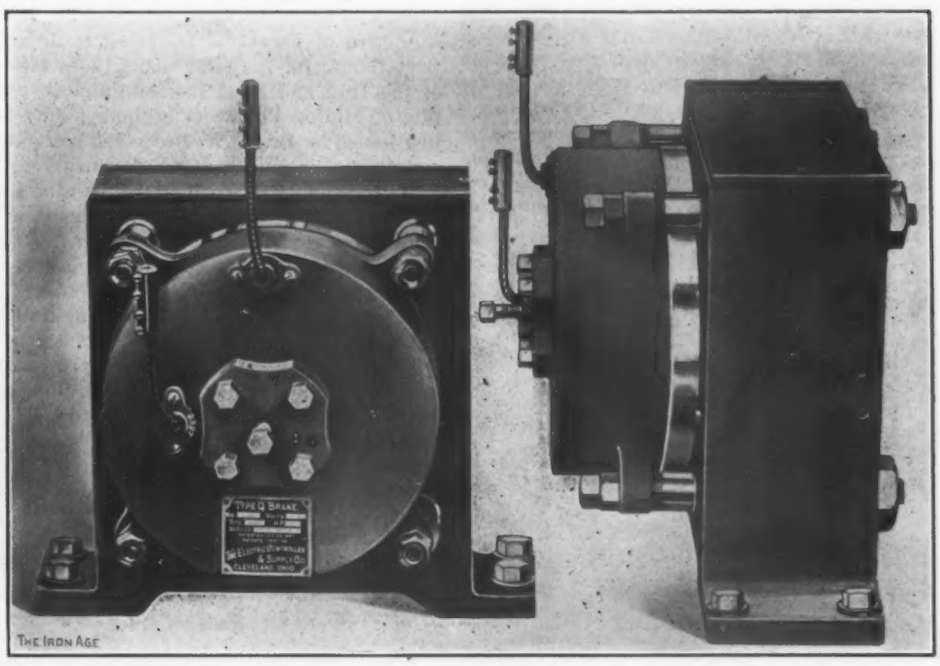


Fig. 1.—Two Views of the Type Q Magnetic Brake, Made by the Electric Controller & Supply Company, Cleveland, Ohio.

The main frame E is a square cast iron case provided with supporting lugs or feet and a cast iron cover, H, to allow the easy inspection of the working parts. On the side where the brake is coupled to the motor there is a circular opening through which the hub J of the brake may be removed. The case contains square stationary cast iron friction plates, F, which are prevented from rotating by studs, N, at the four corners of the case, but are free to move laterally, and circular rotating brass plates, G, supported by and keyed to the hub, but also free to move laterally. The friction plates run in oil, which keeps the coefficient of friction constant under all conditions. The hub is of steel, with keys cut from the solid, and is supported by and firmly keyed to the motor shaft. It is provided with an oil slinger, I, to throw oil inside of the case and prevent it running out at the hub opening. Lubricating oil is placed in the case to a depth of ½ inch below the lowest point of the hub opening. The moving plates dipping into the oil throw some of it by centrifugal force to the top of the case, whence it drops on the friction plates, effectively lubricating them. The oil also acts as an agent to carry the heat away from the friction plates and distribute it over the entire surface of the case, from which it is rapidly radiated.

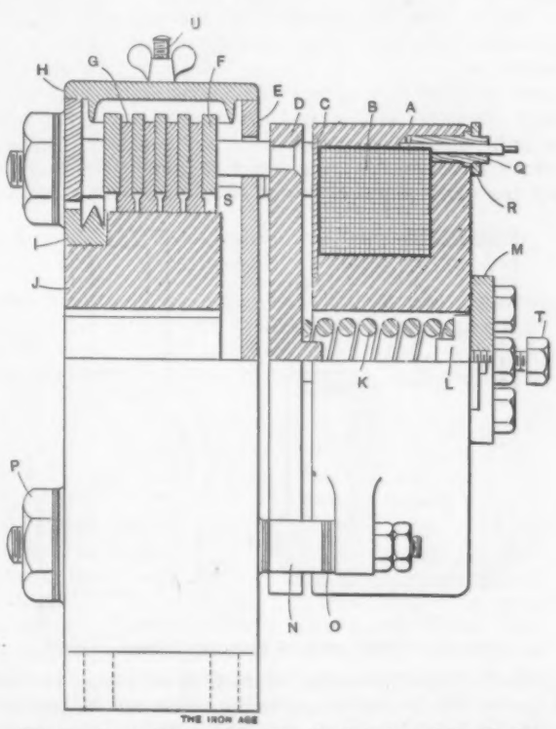


Fig. 2.—Cross Section Showing the Interior of the Brake.

The brake is released by an electro-magnet through a diminutive air gap, which operates quickly with a comparatively small current and without any hammer blow. The electro-magnet is mounted on the studs N, which prevent the stationary plates from revolving. The coil of this magnet B is form wound, thoroughly insulated and treated with a vacuum and drying impregnating process which practically converts the copper and insulation into a solid mass, thus excluding all moisture from the coil, and aids in dissipating the heat. C is a brass retaining plate and D the steel armature plate. The braking force, applied by the steel spring K, is always a maximum and equally effective in either direction of rotation and can easily be adjusted by the adjusting screw T in the center of the spring cover M on the side opposite to the motor. When the total amount of wear on all of the plates equals ¼ inch one new square plate can be placed in the friction case by removing the magnet case and two top studs. The brake is designed and always tested to release on one-half the full load current of the motor as a maximum. Due to the large pole area, the brake does not drop back until about one-tenth the full load current, insuring a continued release of the brake until the current is entirely cut off.

The coil, being entirely inclosed by the magnet case A, which is of special steel, is protected from the weather and from mechanical injury, grounding or short circuiting. The working parts of the brake are also inclosed and waterproof, insuring equally good service under all conditions of weather. All parts are standardized, being machined from jigs permitting interchangeability of parts.

A Device for Removing Rolls.

Charles W. Bray, president of the American Sheet & Tin Plate Company, Pittsburgh, has designed a roll removing device on which he has received a patent, assigned to the company. The invention permits of the ready removal of rolls from their housings and the placing of rolls in housings. In the operation of removal the roll is drawn out endwise through the window in the housing.

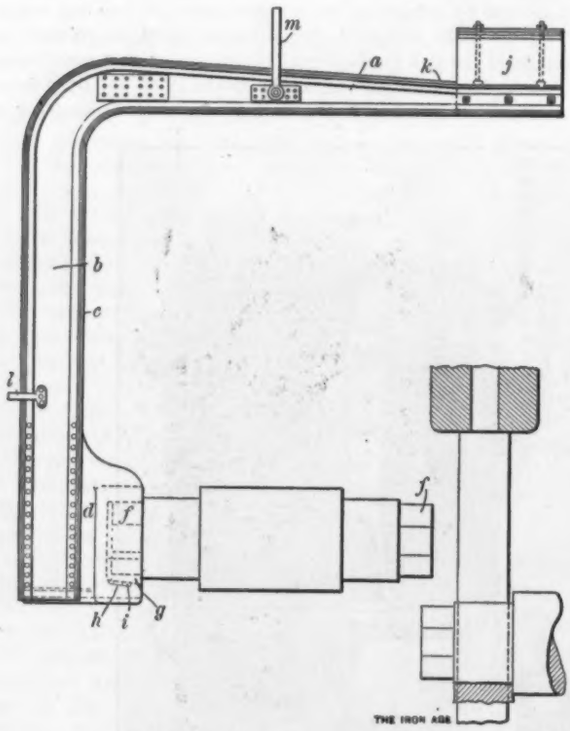


Fig. 1.—Device for Removing Rolls.

Fig. 1 is a side elevation of the device in position for removing a roll. Fig. 2 is a detail view of the socket wedge, while Fig. 3 is a front elevation. An overhung lever or goose neck is provided having an upper horizontally extending arm, *a*, and a vertical leg, *b*. The lever is built up in box girder form to provide a stiff and strong structure. At the lower portion of the vertical leg the cover plate *c* is cut away and within the box girder is placed a casting or foot, *d*, as shown in Figs. 2 and 3. This foot is secured by rivets and is provided with a recessed socket of circular form. The socket feeds over the wobbler *f* at the end of the roll neck, and the wobbler is firmly clamped in the socket, a sliding wedge, *g*, being employed. This fits in a notched-out portion of the socket and may be removably held by a lug, *h*, fitting in an elongated recess, *i*. The upper overhung arm of the lever carries a counter weight, *j*, which is secured by cutting away the top cover plane *k*, and fitting the lower portion of the weight within the box girder. On the vertical portion of the lever is a handle, *l*, which permits of easy manipulation.

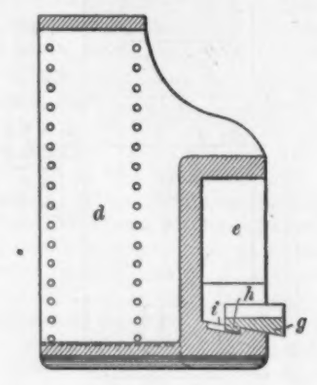


Fig. 2.

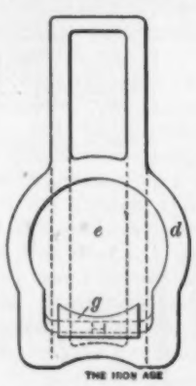


Fig. 3.

Side and Front Views of Foot, Socket and Wedge.

The apparatus is hung from an overhead crane by the clevis attachment *m* and the crane is then moved to bring the socket into engagement with the wobbler of the roll neck in the housing. After the removal of the coupling box and the brasses and chucks, as the socket is slid upon the wobbler, the shoulder on the neck pushes the wedge *g* back into the socket and thus binds the neck in place. The overhead crane is then actuated to lift slightly and then to move the roll endwise through the window in the housing. The lower roll can be removed in a similar manner.

European Ironmasters as Hosts.

Active preparations are being made on both sides of the Atlantic for the forthcoming joint meeting in London of the Iron and Steel Institute and the American Institute of Mining Engineers, beginning July 23. A circular just issued by Dr. R. W. Raymond, secretary of the latter society, makes the following statements:

1. It is doubtful whether the plans of members attending the London meeting will be consistent with any arrangements for their going and returning together. Nearly all of those consulted hitherto and expecting to attend the meeting wish to use this opportunity for additional travel abroad. Yet there is a general desire for the social pleasure of an "institute excursion" across the Atlantic.

2. Such an ocean excursion could not be made in a specially chartered, ordinary steamship with the comfort now afforded by the largest modern Atlantic liners. It would be unquestionably better for the party to take passage upon one of these.

3. The following plan is suggested as most likely, on the whole, to accommodate those who wish to spend some additional time abroad:

(*a*) It is proposed that the party shall leave New York about the middle of July, arriving in London for the meeting, which begins July 23, and (after the two weeks of that meeting and its excursions) return to New York by steamer leaving Europe the first week in September. This would allow two weeks for tours in Great Britain or elsewhere, or for the visit to Germany, mentioned below. Perhaps the allowance of an additional week would be generally desired, but apart from this detail the above plan is the only one which seems practicable, and if it fails to receive sufficient support no other will be formed. In that case members will be left to make their own arrangements for the trip.

(*b*) For the execution of any such plan it will be necessary to secure a reservation of the required accommodations many months in advance, and it is still more important to members individually that they should have early notice of an abandonment of an excursion plan, that they may be able to make timely arrangements for themselves.

(*c*) This office will not undertake the labor incident to the organization of such an excursion. If a sufficient number signify a desire to take part in it their names will be furnished to Thomas Cook & Son of New York City, who will conduct further correspondence.

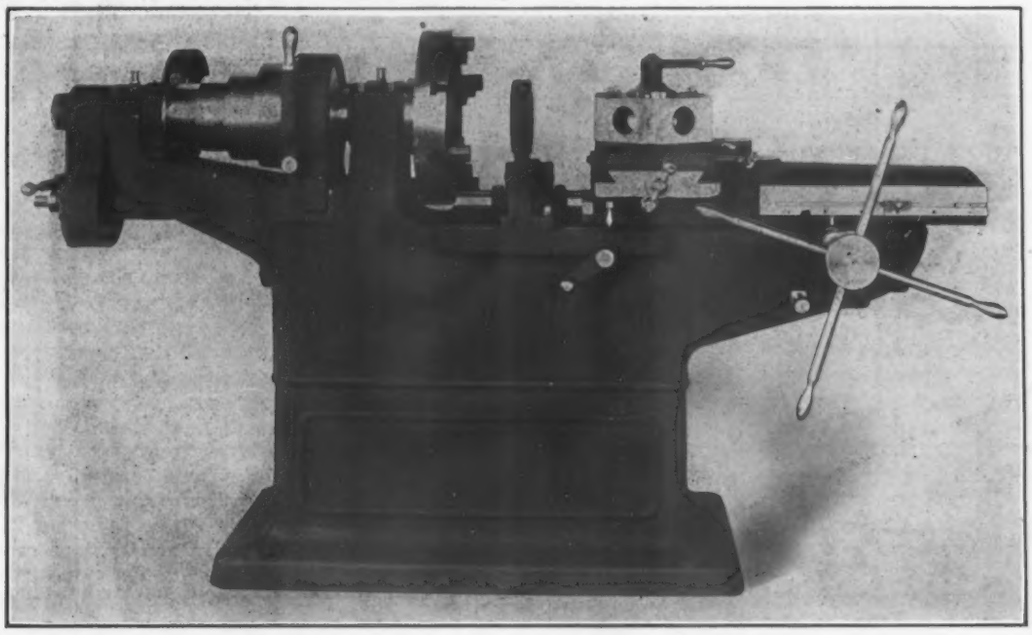
A communication has been received from the Society of German Ironmasters (many members of which were guests of this institute in 1890) cordially inviting the institute party to visit Germany after the London meeting. The number of those who are able to accept this invitation will be reported to that society, and its arrangements for their entertainment will be subsequently announced.

A report of the Bureau of Statistics of the Department of Commerce and Labor puts the total imports and exports of merchandise by the United States in 1905 at $2,806,000,000, as compared with $2,307,000,000 in 1900, the average increase in the five years' interval being $100,000,000 a year. If the figures of trade with Hawaii and Porto Rico, formerly foreign territory and included in the statements of foreign trade prior to 1901, were added to the above the total for 1905 would approximate $2,900,000,000. Both the export and import records last year were in excess of those for any preceding year. The imports for the 12 months were $1,179,358,846, against $1,035,909,190 in 1904.

The Davis Cross Feed Turret Lathe.

The increasing use of special machines for doing certain work, or, as they are sometimes called, single purpose machines, has been mentioned in these columns before. Another machine which may be considered an addition to this class of tools is the 24-inch turret boring lathe with power cross feed to the turret and geared friction head, built by the W. P. Davis Machine Company, 126 Mill street, Rochester, N. Y. In every fair sized shop there are large numbers of small parts that have to be bored and formed and one or more machines suited to this work are required. The machine illustrated is particularly adapted for all work of this class within its capacity.

By means of the power cross feed on the slide carrying the turret work can be bored and faced at one setting, or forming of almost any description can be done by attaching proper forming tools on the various sides of the turret. In all its other features the machine is identical with one which the company has been making for some time. There are 16 speeds to the spindle secured by two driving pulleys on the countershafts and the friction head, and for each speed of the spindle there



A 24-Inch Turret Head Boring Lathe with Cross Feed to the Turret, Built by the W. P. Davis Machine Company, Rochester, N. Y.

are six quick changes of feed. When necessary the boring bar is supported in a guiding rest. At other times the rest is swung back out of the way by loosening one bolt.

The general design will be seen to be one that suggests a very rigid and strong tool. The spindle has a 2-inch hole through it and is supported in a front bearing 4 inches in diameter by 6 inches long and a rear bearing 3 inches in diameter by 4½ inches long. The turret is 12 inches across the flats and contains six holes 2¼ inches in diameter. The turret slide is 38 inches long and 14 inches wide, and the turret has a travel of 30 inches on the slide. An independent four-jaw 18-inch chuck is furnished with the machine. The floor space required by the machine is roughly 8 x 3 feet and the weight 3200 pounds.

The Franklin Institute's Officers for 1906.—At the annual meeting of the Franklin Institute, Philadelphia, January 17, the election of officers for the ensuing year resulted in the following selection: President, John Birkinbine; vice-president, James M. Dodge; secretary, Wm. H. Wahl; treasurer, Samuel Sartain. Auditors—Wm. O. Griggs and Samuel P. Sadtler. Managers—Cyrus Borgner, Persifor Frazer, Jawood Lukens, Horace Pettit, James Christie, Harry W. Jayne, Lawrence T. Paul, Otto C. Wolf and Wm. H. Lambert. Committee on Science and Arts—Richard L. Binder, Thos. P. Conard, Charles Day, C. C. Heyl, Arthur Falkenau, Geo. A. Hoadley, W. N. Jennings, Louis E. Levy, Chas. F. Ronaldson, Ernest M. White, H. F. Colvin, Geo. S. Cullen, J. M. Emanuel, Henry R. Heyl, John M. Hartman, Richard L. Humphrey, Harry F. Keller, Tinius Olsen, Samuel P. Sadtler, W. J. Williams, Clarence A. Hall and Wilhelm Vogt.

Motor Omnibuses in London.

The London Power Omnibus Company, Limited, which has been operating motor omnibuses in London for the last two years, has changed its name to the Pioneer Company and is about to extend its equipment greatly. At present there are in service 13 single deck omnibuses and an order has been placed for 75 double deck pattern, which are being delivered at the rate of two a week. A garage, the largest in Europe, which is 250 feet long x 90 feet wide and is capable of holding about 200 cars, has been built at Cricklewood. In the large open yard at one end of the building the cars are washed as they come in, and in the yard at the opposite end the cars are made ready for the next trip. Petrol is stored in two underground tanks, each holding 1000 gallons and arranged with pumps, piping and flexible hose so that they can feed 12 cars at a time in about five minutes. Nearby is a battery charging house and a repair shop containing six repair pits.

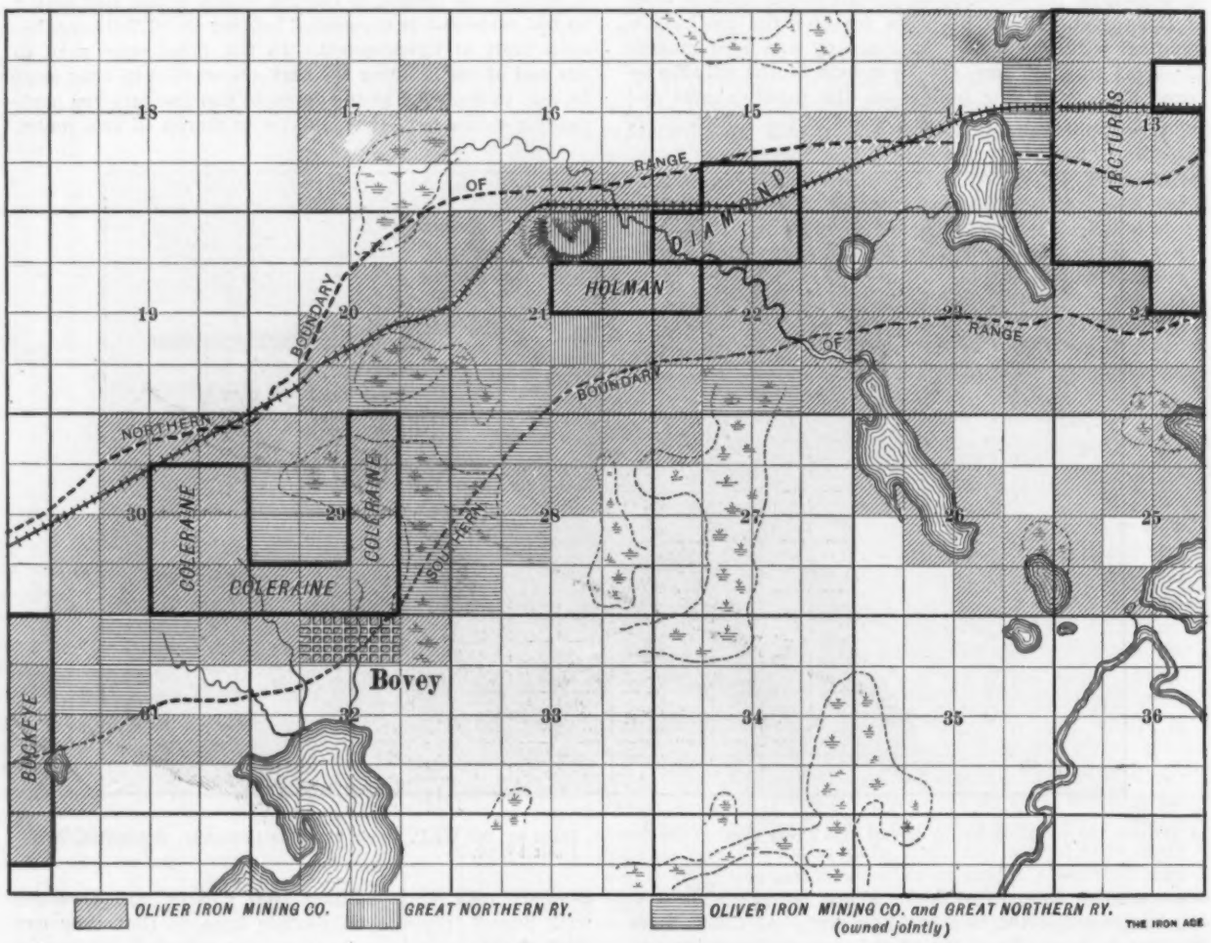
The buildings will be heated by hot air and lighted electrically. The heating and ventilating equipment was supplied by the Buffalo Forge Company, Buffalo, N. Y., through its British office, 39 Victoria street, London, S. E. Each building has its separate plant. The arrangement is such that the plant may be used for heating alone when ventilation is not needed, but ordinarily the fumes of petrol in the car house require a large amount of rapidly circulating fresh air to dispel them. The heating coils for the fans are supplied with steam at 15 pounds pressure from a sectional type boiler having large heating and grate surface. The steam after being condensed is returned by gravity to the boilers and used over repeatedly. For the car house air is supplied at the rate of 18,000 cubic feet per minute and for the repair shop 5000 cubic feet per minute. In each plant a large slow running steel plate fan is used, which draws air from outside or from within the building as required and forces it over the heating coils to be distributed through pipes to all parts of the building. The fans are driven by electric motors and are mounted on platforms so that they occupy little or no useful floor space.

The Western Mesaba Iron Range.

BY DWIGHT E. WOODBRIDGE.

The Mineral Wealth of Township 56, Range 24.

Of all the westerly portion of the Mesaba iron range, township 56, range 24, shown in the accompanying map, seems to have proved up better than any other part. It has been in this section of the district that the Grand Rapids Exploration Company and others interested with it were at work some time. After thorough examination of all that part of the Mesaba running from the Nashwauk district in the southwestern corner of 57-22 clear to the Mississippi River in 55-25, the Duluth men back of the Grand Rapids company settled upon 56-24 as the most favorable portion of the entire region and concentrated operations there. These operations are still under way, though not by the Grand Rapids company, and there is little doubt that more work will be in progress there the coming season than ever before.



The Western Mesaba Iron Range, Township 56, Range 24, Showing the Holdings of the Oliver Iron Mining Company and the Great Northern Railroad.

It is probable that there are, from the Arcturus on the east side of 56-24 to the Buckeye in the southeast corner of 56-25, not less than 300,000,000 tons of ore. To be sure, not that much has been proved up by explorations so far conducted; but by the work that has been done, the depth of proved holes, the location of grounds surrounded by mines, and from other reasons, this estimate is probably as nearly correct as can be given now. If these figures approach the facts this is one of the more important districts on the Mesaba range—surpassed, to be sure, by the townships about Hibbing, but perhaps by no others.

The Great Northern Holdings in This Township.

It is in this district that the Great Northern Railroad has the bulk of the ore, which it may be able to lease. It is from this section, in other words, that this road must get the bulk of the 500,000,000 tons with which public rumor credits it.

Ownership in this part of the range is almost entirely in the two large corporations—the Oliver Iron Mining Company and the Great Northern Railroad. Indeed, there are very few 40-acre tracts that have not been corralled by one or the other. The operations of these companies indicate what they think of the district. The Duluth, Missabe & Northern Railroad, which is affiliated with the Oliver Iron Mining Company, is building a line of railroad to the region, and next autumn will be running its trains not only to Bovee, just north of Trout Lake, but to the Holman and other mines there.

Some years ago the Great Northern Railroad entered this district by the purchase of a half interest in lands owned by a Minneapolis lumberman, T. B. Walker, paying therefor $200,000. At that time the Grand Rapids Exploration Company had a lot of lands close by and was exploring busily and successfully. Messrs. Congdon and Hartley also had other properties than the Grand Rapids in the same vicinity, after their search over the entire western range for the most favorable spots for iron deposits. About a year ago the Congdon-Hartley lands, including the Canisteo and Holman and other properties, were sold to the Oliver Iron Mining Company, which already had the Arcturus, the Diamond and the Buckeye tracts, on all of which ore had been shown to a very considerable quantity. Ever since that time the Oliver Company has been taking additional lands along the trend of the formation, until it had about everything but the Walker tracts. In these an undivided half interest was held by the Great Northern Railroad.

The Oliver Company Competing with the Great Northern.

It had been Mr. Hill's idea that no consuming concern would ever compete with him for the remaining half interest in these lands. The cost of mining, freight to the lake and what dressing of ores might be necessary were thought to be so great that there would be no incentive for speculative buying. While this might be true, the Oliver Iron Mining Company, through its interests in

railroad and water transportation for its ore, was in a very different situation. Last summer, therefore, its Duluth management took up the question of the purchase of the remaining half interest in these lands. The deal has just now been closed and the deeds placed on record. Mr. Walker gets a very different price for these lands, bought at this stage of the game, from what he received when the question of good ore on the western Mesaba was a doubtful one. For the half interest which the Great Northern secured for $200,000 he was paid only $100,000. The price paid him now for the other half cannot be stated, as it is determined to a large extent by the amount of ore to be found in the lands at a certain time. Men very closely connected with the district and with the progress of exploration there consider that there may be 150,000,000 tons of ore found on these Walker lands, half of which is the property of the Oliver Iron Mining Company under this new purchase, and half of the Great Northern Railroad.

There seem to be two important ore basins in 56-24. One of these centers about sections 21 and 22, where are the Holman and other lands. The Holman ore deposit is very deep and of a large tonnage. The other is in sections 30, 21 and 29, where are the Canisteo, Lewis and Fletcher, all Oliver mines. The Buckeye is a portion of this basin, while the Arcturus, away to the eastward, is somewhat separated from the larger basins of the district. There are, to be sure, separated deposits throughout the district.

The Character of the Ore.

Much of the ore in this region must be washed and dressed before it can go into the furnace, but there is a larger proportion of ore merchantable as it is mined than is generally supposed. Under the Oliver company's deed for the Walker lands the ore is divided into two classes—that which will average better than 57 per cent. and that which runs from 36 to 57 per cent. iron. For the former the Oliver Company pays on the basis of 13 cubic feet to the ton; for the latter the tonnage is fixed at 75 per cent. of the measurements as shown, to allow for loss in washing. For both classes the price is the same, both for the first payment and for the final proportion of the purchase price of the lands. There is considerable ore in the Oliver Company's properties here that will run up to 58 and 62 per cent. iron and within the Bessemer limit as to phosphorus. Most of the tonnage to be mined will be from under ground and the mines may be very wet, for a time at least. But some of these mines may be stripped and mined with steam shovel. Even now arrangements are under way for stripping a portion of one of the properties in the central group.

Considerable headway has been made in the washing proposition and it is known that it will be a simple matter. Experiments have been made on a large scale and are once more in progress. It is now believed that the ores to be dressed will not be treated at the mines but will be conveyed to Trout Lake, which is but a mile from the Canisteo group; that ore concentrators will be erected on the lake and that it will there be handled and made ready for shipment to the furnaces. The new railroad line of the Duluth, Missabe & Northern passes southeast along the east side of Trout Lake, headed for the Duluth ore piers.

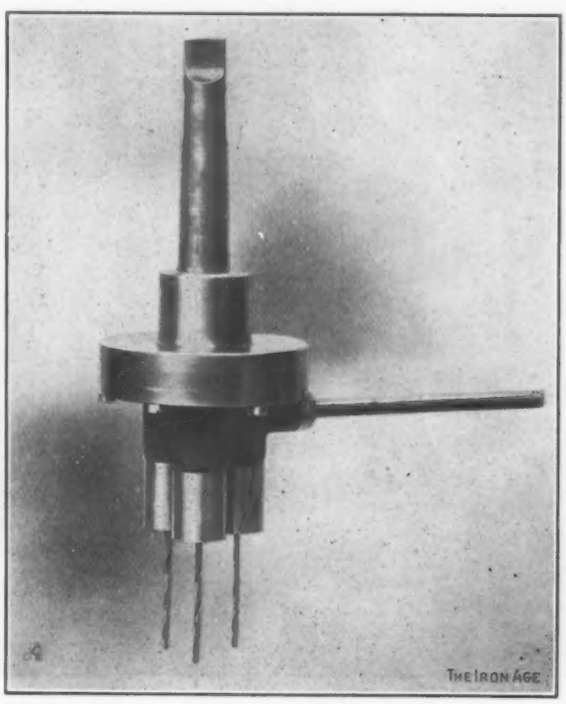
Explorations and Tonnage.

Exploration has already begun on a large scale on the Walker lands by the Oliver Company. Twelve drills are now placed on one of the parcels of land contained in the general tract and these will explore that parcel until it is thoroughly exploited. Other parcels will be similarly treated. Exploration has been carried along for several years on much of the balance of the lands controlled by the Oliver Company in this district, either by that company or those who originally held the lands for mineral.

The annual tonnage to be shipped from this part of the Mesaba range will be very large and the preparations now being made for its handling are of the most elaborate nature. It is quite probable that no less than 3,000,000 tons a year may come out of the district bounded on the east by the Arcturus and the Buckeye on the west. This estimate is based on the computation of minimum tonnage settlements and clauses in the Oliver-Walker purchase agreement. It is no wonder, then, that the Duluth, Missabe & Northern Railroad is building a very substantial line, without grade crossings, of the heaviest character of construction, and is erecting a dock that will be the largest in the world. When the Great Northern Railroad builds a branch into this district the tonnage to be moved annually will be still greater.

The Reed Multiple Drilling Attachment.

An attachment for drilling several holes simultaneously when used in an ordinary single spindle drill or lathe has been perfected by the Francis Reed Company, Worcester, Mass. The device is capable of immediate application without any special fixtures and is always driven forward, making it unnecessary to reverse the direction of rotation of the spindle. It is made to order only and according to specifications to adapt it perfectly to the class of work for which it is to be used. Two styles are made wholly incased and semi-incased, according to the size and condition of the work. Straight spur gears are used throughout. In the smaller sizes



The Reed Multiple Drilling Attachment.

the drive is from an internal gear and in the larger sizes spur gears and idlers are used.

The accompanying engraving illustrates an attachment of the wholly incased type arranged to drill three holes, equally spaced upon a 1 7-16-inch circle. It is not necessary to space the drills equally, as the attachment can be made for drilling holes in any pattern desired. A short light arm is attached to the case to hold the drills in a given position. As the tendency of the case to rotate is very slight there is practically no strain upon the case or the arm. All bearings are made large and long, with suitable oil grooves, and the gears are of as coarse a pitch as is consistent with their work.

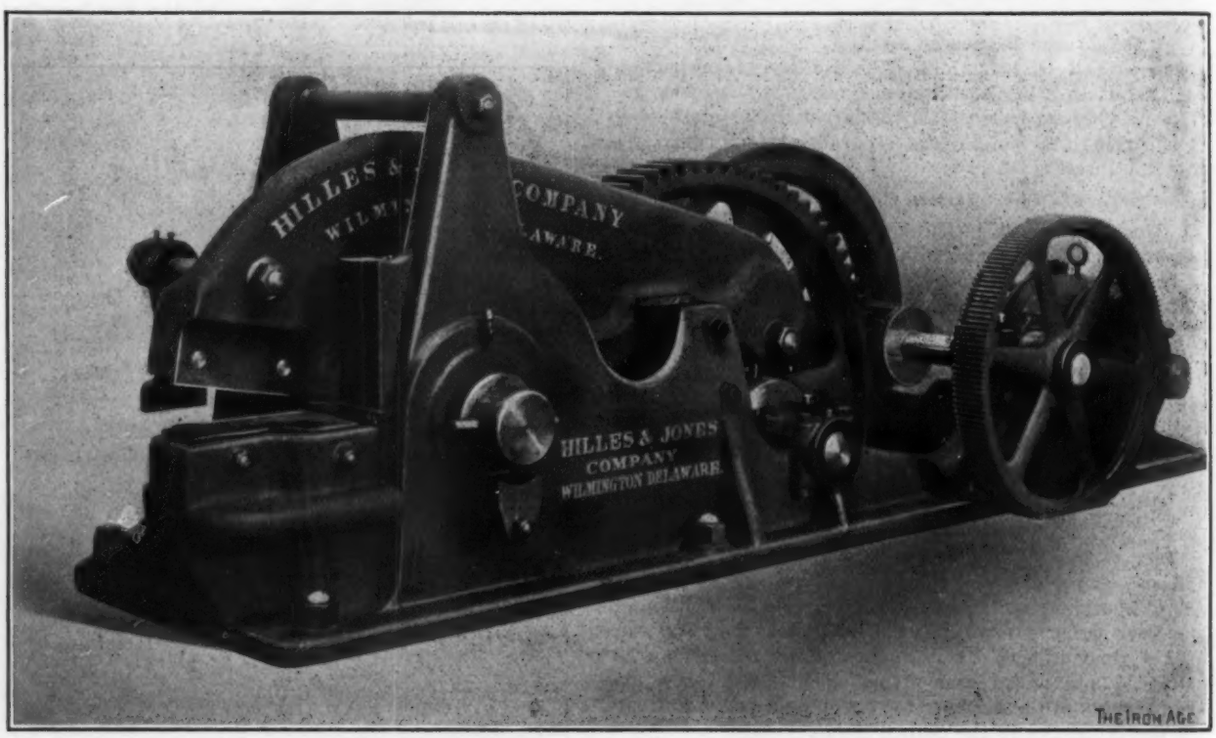
This attachment is applicable to any work where two or more holes are to be drilled in constant relation to each other, such as drilling cylinders and heads for engines, pumps, &c., and also lathe and drill chuck manufacturing or any special work in quantities. The spindles are not adjustable, but the cost of the attachment is so nominal that a sufficient number may be kept on hand to meet different requirements.

The first passenger train, carrying notables and officials, passed through the Simplon Tunner between Italy and Switzerland January 25.

A New Hilles & Jones Lever Shear.

The principal feature of the new No. 4 lever or alligator shear recently designed and completed by the Hilles & Jones Company, Wilmington, Del., is its substantial construction, adapting it for heavy working capacity. It is capable of shearing 3¼-inch square steel bars cold, or 1½ x 12 inch flat bars, and is one of the first of a full line of these machines which will shortly be placed on the market. The largest size which it is the present intention to build will be designed for shearing 6-inch square bars cold.

The machine illustrated has knives 16 inches long by 6 inches deep. Its normal speed is 26 strokes per minute and it is driven by a 20-horsepower motor. The lever or ram is 18 inches thick at the point where it works on the lever pin and the latter is $9^{9}/_{16}$ inches in diameter. These dimensions indicate significantly the powerful nature of the machine. The lever is operated by a pintle on a steel cam shaft connected to the end of the arm, which makes the movement positive and prevents the lever from sticking. Provision is made for taking up wear on the lever pin and in the bearings. The machine has a total weight of 30,500 pounds and occupies a floor space 4 feet 4 inches wide by 11 feet long.



The New No. 4 Lever Shear Built by the Hilles & Jones Company, Wilmington, Del.

Tests of a 500 Horse-Power Coke Oven Gas Engine.

The *Proceedings* of the Vereines Deutscher Ingenieure, Berlin, for 1905, Vol. 49, contains a paper by E. Meyer giving the results of tests of the efficiency of a 500 horse-power gas engine supplied with coke oven gas. The engine was of the Oechelhäuser type, built for use with blast furnace gas and fitted with a double acting charging pump, delivering on the one side air and on the other gas to the working cylinder. To fit the engine for working with the stronger gas from coke ovens both sides of the charging pump were arranged to deliver air, the gas being supplied by a separate pump; but as this arrangement gave an excess of air a blow off valve was provided between the pump and the cylinder. For adjusting the relative apertures of the air and gas ports the latter were fitted with a sliding collar. The principal dimensions were as follows: Diameter of working double piston cylinder, 27 inches; stroke of front piston, 38 inches; stroke of back piston, 37½ inches; diameter of air pump cylinder, 45 inches; stroke, 20 inches; diameter of gas pump cylinder, 23½ inches; stroke, 20 inches. The engine was employed to drive a 66-inch blast furnace blower, coupled direct on to the tail piston.

The coke oven gas ranged in calorific power from 3112 to 3860 heat units per cubic meter. The best results in the tests were obtained with the gas valve half open and the air blow off valve about one-quarter open. Under these conditions, and running at 110 revolutions per minute, the engine developed a useful effect of 628 horse-power, with a consumption of 15,220 cubic feet of gas per hour and a heat consumption of 1,290,000 units. The indicated horse-power was 765, of which 137 horse-power was consumed in overcoming the internal friction of the machine. The mechanical efficiency of the engine was 82.13 per cent.

A series of other tests made, with the gas and air valves adjusted in different ways, led to the following general conclusions: For a given engine speed the consumption of power per revolution by the air pump varies directly with the load, and conversely with a given load the consumption per revolution varies with the speed. The ratio between the consumption of power by the pump and the indicated power of the engine varies inversely with the load. For a given load this ratio diminishes with the speed, but not to any considerable extent. Under full load and at normal speed about 15 per cent. of the indicated work is absorbed by the charging pump. Tests made at highly divergent speeds show that the consumption of heat per indicated horse-power hour is only about 1660 heat units, so that about 38 per cent. of the calorific power of the gas is converted into indicated power, though when the load is reduced to about 0.42 the consumption of heat rises to 1820 units. Owing to the diminution of the mechanical efficiency, however, the consumption of heat per horse-power hour of useful effect increases rapidly as the load decreases.

E. B. Morris, director of the Cambria Steel Company, Johnstown, Pa., is quoted as follows: "I think the Cambria Steel Company will be called upon to spend $5,000,000 or $6,000,000 in the next few years in various directions—namely, No. 8 blast furnace, additional by-product coke ovens, open hearth furnaces, ore steamers on lakes, very large expenditures for increasing water supply for the Bessemer works, &c. It is merely prudence therefore to husband the profits in good years."

The Westinghouse Electric & Mfg. Company's Finances.

Stockholders of the Westinghouse Electric & Mfg. Company will meet at East Pittsburgh March 26, to vote on a proposed increase in the capital stock and an issue of convertible bonds. The company has determined upon an issue of $15,000,000 convertible sinking fund 5 per cent. bonds, due January 1, 1931, convertible into assenting stock of the company at 200 per cent. after January 1, 1910, and redeemable after January 1, 1912, at 105 per cent. and accured interest, with an annual sinking fund of $500,000, beginning December 31, 1907. From the proceeds of the bonds the company will retire all of its outstanding commercial paper and will have left ample capital to provide for extensions and for its continually increasing business. The trust indenture under which the bonds are to be issued is to provide that the property of the company shall remain unmortgaged, and is also to contain stipulations as to special security for the bonds. The entire issue of $15,000,000 has been purchased by Kuhn, Loeb & Co., New York, subject to the right of stockholders to subscribe at 98 per cent. and accrued interest. The outstanding commercial paper totals approximately $8,600,000, of which $2,600,000 consists of debenture 5s, $4,000,000 5 per cent notes and $2,000,000 6 per cent. notes, so that the proposed new bonds mean an increased indebtedness of $6,900.000.

George Westinghouse, president of the company, has issued a circular from which the following financial statement is taken:

The average annual net earnings of the company and its said subsidiary companies for the five years ended March 31, 1905, available for interest and dividends have been	$3,626,388
The earnings available for interest and dividends for the eight months ended November 30, 1905, were	2,488,641
The annual amount required to pay the interest upon the $15,000,000 of bonds and all other interest charges is	1,231,000

The following statement is based upon the balance sheet of November 30, 1905, and shows the financial position of the company after the application of the proceeds of the sale of the $15,000,000 of bonds and the payment therefrom of the company's commercial paper and other floating debts:

Assets.

Plant, including real estate, factories, machinery, &c.	$10,938,764
Quick assets, including cash ($4,644,162), accounts and bills receivable, materials, work in progress and manufactured products	22,336,213
Investments, including stocks and bonds of other companies	21,696,213
Other assets, including patents	6,951,029
Total	$61,922,220

Liabilities.

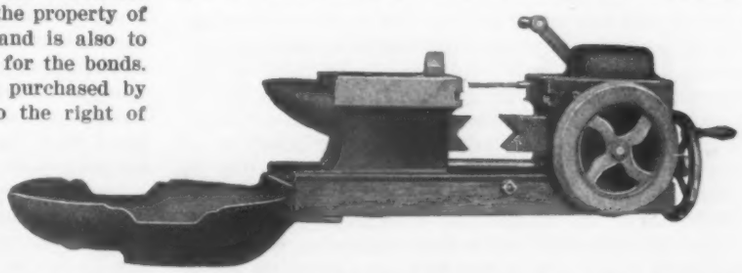
Capital stocks outstanding	$24,998,700
Convertible sinking fund 5 per cent. gold bonds	15,000,000
Current accounts for purchases, &c.	1,357,848
Debenture certificates	2,500,000
Collateral notes	6,000,000
Surplus	12,065,672
Total	$61,922,220

Fair, Taylor & Co. have taken over by purchase from the heirs the pig iron, coke and foundry supply business formerly conducted by Seymour R. Church, 307 Sansome street, San Francisco, including the several agencies handled by him. The senior member of this firm, Aubrey Fair, has been for many years assistant manager and in charge of the sales department of the Stockton Milling Company, while A. L. Taylor was for a long time vice-president and treasurer of W. T. Garratt & Co., brass founders, of San Francisco. The firm has removed its offices to 611 Schmiedell Building, 604 Montgomery street, San Francisco.

At a dinner of the Technical Publicity Association, held at the Aldine Association, New York, January 18, Robert L. Winkley of the Publicity Department of the Pope Mfg. Company gave an informal talk on methods of advertising automobiles. His remarks covered the direct ways of securing publicity through advertising in magazines, newspapers and the distributing of novelties, such as paper weights, &c., and more indirect ways, such as by participating in automobile races, exploiting new features, using trademarks, &c. Among the companies represented by members at the dinner were Ingersoll-Rand Company, Niles-Bement-Pond Company, H. W. Johns-Manville Company, General Electric Company, Crocker-Wheeler Company, Sprague Electric Company, Yale & Towne Mfg. Company, John A. Roebling's Sons Company and A. S. Cameron Steam Pump Company.

The Detroit Combination Tool.

A general utility tool combining a drill, an ordinary vise, a pipe vise, an emery wheel, an anvil, a forge and a blower for the forge is now being manufactured by the Detroit Tool Company, Detroit, Mich. As the illustration shows, the device consists of a steel faced bed or base having at one end a stationary head stock, at the other a movable tail stock and an overhung forge pan. The head stock contains the mechanism of the rotary blower, drill, grinder and the stationary part of the vise and the pipe vise jaw. The tail stock serves as an anvil, a support for work being drilled and the movable member of the ordinary and pipe clamping vises. This part slides on the bed between two adjustable guides and is operated through a screw by the hand wheel at the outer end of the head stock. The air delivered by the blower in the head stock is conveyed through a channel in the base to the forge at the opposite end. The fan shaft of the blower projects through the air intake at the front side of the gear case and is fitted to receive an emery wheel, the intake being so located as to form a current of air drawing the emery dust into the forge and away from the operator.



A Combined Drill, Grinder, Vise, Anvil and Forge Made by the Detroit Tool Company, Detroit, Mich.

The blower and emery wheel are operated by a crank wheel located on the rear side of the gear case. The crank wheel is fitted with a pulley for the application of power when so desired. The fan and emery wheel are geared 12 to 1 and may easily be run by hand, 2000 revolutions per minute. The drill is operated by the same driving wheel, being fitted with a clutch arrangement so that it may be thrown in and out of gear at the will of the operator, so that either the drill or the blower may be operated independently of each other. The emery wheel is of special construction, having an open center, with the spokes beveled propeller fan fashion to throw the air into the blower intake.

The accessories furnished with the tool include drills, a blacksmith's hardy and tongs and a crucible holder for holding a crucible or metal ladle over the fire. This also may be used for holding a soldering iron when it is desired to heat it over the forge fire.

At the annual meeting of the Hudson Iron Company on January 22, 1906, Frank A. Wilmot, president of the American Tube & Stamping Company, Bridgeport, Conn., was elected president, in view of the retirement of Chase Andrews from that office, Mr. Andrews having disposed of his interest. Harold G. Villard was re-elected vice-president and James M. Clark secretary and treasurer. The two directors, in addition to those above named, are Charles R. Wilmot of Orange, N. J., and A. H. Bickmore of New York. The Hudson Iron Company owns and operates the Secaucus Furnace at Secaucus, N. J., of which Albert Trinler is manager. The furnace was blown out in the past week for extensive improvements.

Specifications for Steel Rails.*

Report of the Special Committee of the American Society of Civil Engineers.

At the annual meeting of the American Society of Civil Engineers held in New York January 17, 18 and 19, 1906, the following report was presented by the special Committee on Steel Rails:

Your special Committee on Rails respectfully report that the instructions under which they were appointed in 1902 are: (1) To report upon the results obtained in the use of rails of the sections presented to the society in annual convention, August 2, 1893, by a special committee appointed for that purpose; (2) to report whether any modification of any of said sections is advisable and, if so, to recommend such modification; (3) to report upon the recognized practice as to chemical composition and mechanical treatment used in the manufacture of rails and the manner of inspection of the same; (4) to report upon the advisability of the establishment of a form of specification covering the manufacture and inspection of rails; (5) if found advisable, to recommend a form of specification for the manufacture and inspection of rails.

Since their appointment they have held as many meetings as the progress of their work seemed to require, in addition to which, and in fact in pursuance of the action of the committee at those meetings, extensive correspondence has been carried on by the officers of the committee with the officials of the principal railroads of the United States, Canada and Mexico. There has also been correspondence with the officers of the Rail Committee of the American Railway Engineering and Maintenance of Way Association and one joint meeting held with that committee. There have also been two meetings with a committee representing the steel rail manufacturers of the United States. Your committee would now report:

Results from Present Sections.

During this year reports have been received from 79 of the leading railroads of the United States, Canada and Mexico. Of these, 13 roads have no criticism to make for or against the American Society sections, 23 roads say they are entirely satisfactory, 2 say emphatically they are good standards, 14 roads criticized the shape of head, 2 roads criticized the web, 2 roads say it ought to have a broader base, some other criticisms refer to the vertical sides, which they claim wear the wheel flanges, and some other slight changes in shape are suggested. In addition 48 railroads reported that the society's sections were their standard, 10 railroads reported that they did not use them, 19 railroads have used them partially as standard, 3 railroads have used them but do not now, 63 railroads say positively they intend to use them as standard, 14 say they will not do so and two say they will probably use them.

What are popularly known as the rail sections of this society were recommended by a special committee in 1893. For the year ending June 30, 1905, the following percentage of their total output was rolled [according to these sections] by eight mills in the United States for domestic and export uses:

	Domestic. Per cent.	Foreign.
Pennsylvania Steel Company, Maryland Steel Company	82	Practically none.
Cambria Steel Company	77	None.
Illinois Steel Company	84	None.
Carnegie Steel Company	69.34	78.9 per cent.
Lackawanna Steel Company	99.3	Practically none.
Tennessee Coal & Iron Company	88.6	None.
Colorado Fuel & Iron Company	65	None.

Since 1893 the speed of trains and wheel loads has been increased proportionately very much more than the weight of rails. The increase in driving wheel loads is approximately 60 per cent., while the maximum weight of rails has increased from 80 to 100 pounds, or 25 per cent. Rails of the heavier sections are not giving the service expected of them, even after making due allowance for the increased traffic tonnage or for the trouble caused by badly balanced driving wheels and poor condition of rolling stock and roadbed, but after due consideration of all the information collected your committee does not feel justified in now recommending any modifications of the sections.

Chemical Composition and Mechanical Treatment.

In relation to the chemical composition of rails made by the acid Bessemer process the general practice in the United States is to accept what are known as the Manufacturers' Standard Specifications. These are:

	70 pounds up to 80 pounds. Per cent.	80 pounds up to 90 pounds. Per cent.	90 pounds up to 100 pounds. Per cent.
Carbon	0.45 to 0.55	0.48 to 0.58	0.50 to 0.60
Phosphorus, not over	0.10	0.10	0.10
Silicon, not over	0.20	0.20	0.20
Manganese	0.75 to 1.00	0.80 to 1.10	0.80 to 1.10

Previous to December 10, 1904, the carbon percentages were five points lower, the other elements being amounts as now. Some railroads have insisted and obtained modifications by which the carbon percentages have been increased and the phosphorus kept not to exceed 0.085 per cent. In a few instances phosphorus has been held lower, but such rails are now made only from a large admixture of imported ores. Some of the Canadian roads have been able to obtain from the United States rail makers 80-pound American Society section rails with the following actual composition:

	Per cent.
Carbon	0.58 to 0.64, average 0.60
Phosphorus	0.059 to 0.071
Silicon	0.125 to 0.165
Sulphur	0.049 to 0.056
Manganese	0.93 to 0.96

The Bessemer rails which the same parties are having manufactured in Canada contain:

	Per cent.
Carbon	0.53 to 0.63, average 0.58
Phosphorus, not to exceed	0.085
Silicon	0.075 to 0.15
Sulphur, not to exceed	0.075
Manganese	0.80 to 1.10

Up to the present time it has not been proven that the basic Bessemer process of rail making is commercially practicable with American iron ores. The basic open hearth process has reached enormous development in the United States, but only one plant is regularly putting its steel into rails. Their standard specifications are:

	70 pounds up to 80 pounds. Per cent.	80 pounds up to 90 pounds. Per cent.	90 pounds up to 100 pounds. Per cent.
Carbon	0.50 to 0.60	0.55 to 0.65	0.58 to 0.68
Phosphorus, not over	0.06	0.06	0.06
Silicon, not over	0.20	0.20	0.20
Manganese	0.75 to 1.05	0.80 to 1.10	0.80 to 1.10

There is also a basic open hearth rail mill in Canada.

The mechanical treatment of the metal differs somewhat in the practice of the largest American rail producers. At three mills the bloom is reheated after leaving the blooming rolls and before entering the rail rolls. At the others the rolling process is a continuous one from the time the ingots are drawn from the heating furnaces. All but two of the mills have three high trains of rail rolls. During several years all the mills have been crowded with work and the tendency has been to use every exertion to increase production. In your committee's opinion this has led to rolling the steel at too rapid a reduction and at too high a temperature and to other details which largely account for the unsatisfactory service given by the heavy sectioned rails.

Practically all large purchasers of rails have them inspected at the mills either by men detailed from their own organization or by professional inspectors. Such inspection covers seeing that the provisions of the specifications under which the rails have been purchased are observed, particularly checking the accuracy of section, squareness and length of sawing, accuracy of drilling, straightness in line and surface and freedom from mechanical defects.

Advisability of an Established Specification.

In this country rails are made by two processes, acid Bessemer and basic open hearth, the former process covering quite 90 per cent. of the production. On the Conti-

* Report presented at the annual meeting of the American Society of Civil Engineers, held January 17, 1906, at New York City.

nent of Europe nearly all rails are made by the basic Bessemer, and in England, with the exception of one works, all commercial rails are made by the acid Bessemer process, the difference in the practice of the several countries being occasioned by the character of their available iron ores. The same controlling influence must be recognized in preparing chemical and other specifications for the manufacture of rails in this country. Your committee believes that a low percentage of phosphorus and high percentage of carbon make a better rail steel than when the amount of the former element necessitates the curtailment of the latter. When rails of lighter sections were used chemical conditions were not so important as with the heavier ones, this because the rolling down of the steel to the smaller sections of necessity gave it more work and also finished the rail at a lower temperature, thus producing a finer grained and tougher metal. This partially explains why so many of the early steel rails gave good physical results, while their chemical composition was so irregular.

Taking everything into consideration, your committee thinks it advisable to present specifications covering the manufacture and inspection of rails, but realizes that restraining commercial ore conditions keep them from being ideal ones chemically, and existing manufacturing plants and practice limit what can be specified for the physical treatment of the steel. But believing, as your committee does, that the physical treatment is of as great importance as its chemical composition, it does recommend certain requirements which should be enforced. These will tend toward the production of better wearing rails and also safer ones. Your committee recognizes that commercial conditions cannot be entirely disregarded by engineeds, but at the same time it believes that when it is known that existing practice results in danger to human life and limb it becomes the duty of the engineer to insist on their being changed, even though that necessitates either a greater cost to the consumer or a somewhat less profit to the producer. That point will adjust itself, but the safer practice should be demanded. This view controlled your committee in framing the clause of these recommended specifications governing the shearing of the rail blooms, as it is well known that one of the frequent causes of failure of steel rails is due to piping and that this comes from unsound ingots. Unfortunately such failures often cause accidents which result in large material damage and, what is worse, the loss of life. Frequently such interior defects cannot be detected until after the rails have been subjected to traffic, hence it is of the greatest importance that care should be exercised in the manufacture, with a view of reducing the danger to a minimum.

Your committee has studied the results obtained from basic open hearth steel rails and, while their use has not extended over many years, at the same time the evidences point to their giving better service than the Bessemer rails. This is strikingly demonstrated by certain experimental very high carbon ones laid on the lines of the Pennsylvania Railroad. It must be understood that the physical differences of the two steels are not entirely due to their chemical composition, as it is a well-known metallurgical fact that steel made by the basic open hearth process possesses characteristics of its own.

They have prepared specifications for both Bessemer and basic open hearth rails. While the majority of the rail plants of the country are not now adapted to the making of basic open hearth rails, the greater known amount of the iron ore supply is suitable, hence the production of that kind of steel rails will increase.

Specifications for Bessemer Steel Rails.

Process of Manufacture.—The entire process of manufacture and testing shall be in accordance with the best state of the art, and the following instructions shall be faithfully executed:

Ingots shall be kept in a vertical position in the pit heating furnaces until ready to be rolled, or until the metal in the interior has had time to solidify. No bled ingots shall be used.

There shall be sheared from the end of the blooms formed from the top of the ingots, assuming that such blooms are about 8 x 8 inches square, at least 40 inches, and if from any cause the steel does not then appear to be solid the shearing shall continue until it does. If by the use of any improvements in the process of making ingots the defect known as piping shall be prevented the above shearing requirements may be modified.

The number of passes and speed of train shall be so regulated that on leaving the rolls at the final pass the temperature of the rail will not exceed that which requires a shrinkage allowance at the hot saws for a 33-foot rail of 100-pound section of 6 7-16 inches, and 1-16 inch less for each 5-pound decrease of section. These allowances to be decreased at the rate of 1-90 inch for each section of time elapsed between the rail leaving the finishing rolls and being sawn. No artificial means of cooling the steel shall be used after the rails leave the rolls, nor shall they be held before sawing for the purpose of reducing their temperature.

Chemical Composition.—Rails of the various weights per yard specified below shall conform to the following limits in chemical composition:

	70 to 79 pounds. Per cent.	80 to 89 pounds. Per cent.	90 to 100 pounds. Per cent.
Carbon	0.50 to 0.60	0.53 to 0.63	0.55 to 0.65
Phosphorus shall not exceed	0.085	0.085	0.085
Silicon shall not exceed	0.20	0.20	0.20
Sulphur shall not exceed	0.075	0.075	0.075
Manganese	0.75 to 1.00	0.80 to 1.05	0.80 to 1.05

Drop Test.—One drop test shall be made on a piece of rail not less than 4 feet and not more than 6 feet long, selected from each blow of steel. The test piece shall be taken from the top of the ingot. The rails shall be placed head upward on the supports, and the various sections shall be subjected to the following impact tests under a free falling weight:

	Feet.
70 to 79 pound rails	18
80 to 89 pound rails	20
90 to 100 pound rails	22

If any rail breaks when subjected to the drop test two additional tests may be made of other rails from the same blow of steel, also taken from the top of the ingots, and if either of these latter rails fail all the rails of the blow which they represent will be rejected; but if both of these additional test pieces meet the requirements all the rails of the blow which they represent will be accepted.

The drop testing machine shall have a tup of 2000 pounds weight, the striking face of which shall have a radius of not more than 5 inches, and the test rail shall be placed head upward on solid supports 3 feet apart. The anvil block shall weigh at least 20,000 pounds and the supports shall be part of or firmly secured to the anvil. The report of the drop test shall state the atmospheric temperature at the time the test was made.

Section.—Unless otherwise specified the section of rail shall be the American standard, recommended by the American Society of Civil Engineers, and shall conform as accurately as possible to the templet furnished by the railroad company, consistent with the paragraph relative to specified weight. A variation in hight of 1-64 inch less or 1-32 inch greater than the specified hight and 1-16 inch in width will be permitted. The section of rail shall conform to the finishing dimensions.

Weight.—The weight of the rails will be maintained as nearly as possible, after complying with the preceding paragraph, to that specified in contract. A variation of one-half of 1 per cent. for an entire order will be allowed. Rails will be accepted and paid for according to actual weights.

Length.—The standard length of rails shall be 33 feet. Ten per cent. of the entire order will be accepted in shorter lengths, varying by even feet to 27 feet, and all No. 1 rails less than 33 feet long shall be painted green on the ends. A variation of ¼ inch in length from that specified will be allowed.

Drilling.—Circular holes for splice bars shall be drilled in accordance with the specifications of the purchaser. The holes shall conform accurately to the drawing and dimensions furnished in every respect and must be free from burrs.

Straightening.—Care must be taken in hot straightening the rails, and it must result in their being left in such a condition that they shall not vary throughout their entire length more than 5 inches from a straight line in any direction when delivered to the cold straightening presses. Those which vary beyond that amount or have short kinks shall be classed as second-quality rails and so stamped.

Rails shall be straight in line and surface when finished—the straightening being done while cold—smooth on head, sawed square at ends, variation to be not more than 1-32 inch, and prior to shipment shall have the burr occasioned by the saw cutting removed and the ends made clean. No. 1 rails shall be free from injurious defects and flaws of all kinds.

No. 2 rails shall be accepted up to 5 per cent. of the whole order. They shall not have flaws in their heads of more than ¼ inch or in the flange of more than ½ inch in depth, and, in the judgment of the inspector, these shall not be so numerous or of such a character as to render them unfit for

recognized second-quality rail uses. The ends of No. 2 rails shall be painted white, and shall have two prick punch marks on the side of the web near the heat number brand and placed so as not to be covered by the splice bars. Rails from heats which failed under the drop test shall not be accepted as No. 2 rails.

Branding.—The name of the maker, the weight of the rail and the month and year of manufacture shall be rolled in raised letters on the side of the web; and the number of the blow shall be plainly stamped on each rail where it will not subsequently be covered by the splice bars.

Inspection.—The inspector representing the purchaser shall have free entry to the works of the manufacturer at all times when the contract is being filled and shall have all reasonable facilities afforded him by the manufacturer to satisfy him that the finished material is furnished in accordance with the terms of these specifications. All tests and inspection shall be made at the place of manufacture prior to shipment.

The manufacturer shall furnish the inspector daily with carbon determinations for each blow and a complete chemical analysis every 24 hours, representing the average of the other elements contained in the steel, for each day and night turn. These analyses shall be made on drillings taken from small test ingots.

Basic Open Hearth Rails.

The specifications for rails made by the basic open hearth process shall be the same as for Bessemer rails, excepting that their chemical composition shall be:

	70 to 79 pounds. Per cent.	80 to 89 pounds. Per cent.	90 to 100 pounds. Per cent.
Carbon	0.53 to 0.63	0.58 to 0.68	0.65 to 0.75
Phosphorus shall not exceed	0.05	0.05	0.05
Silicon shall not exceed	0.20	0.20	0.20
Sulphur shall not exceed	0.06	0.06	0.06
Manganese	0.75 to 1.00	0.80 to 1.05	0.80 to 1.05

Minority Reports.

The report as above is signed by Joseph T. Richards, chairman; C. W. Buchholz, E. C. Carter, S. M. Felton, Richard Montfort, H. G. Prout, Edmund K. Turner and Robert W. Hunt, secretary. John D. Isaacs concurs except as to the clause relating to the present sections. Geo. E. Thackray was not ready to sign the report, but did not desire to make a minority report, thinking that the report should be withheld for further consideration. Wm. R. Webster, Philadelphia, presented a minority report. He held that the strong plea in the report for lower temperatures in rolling, in order to secure better metal in the rails, was inconsistent with the high carbons called for in the specifications, this latter being more in line with the practice of relying on the chemical composition alone to give hardness in the rails. There is no trouble in getting hardness in this way, but the rails are liable to be brittle, and the large number of rails now breaking in service, irrespective of section and weight, cannot be ignored. As to the suggestion that in order to get a rail which could be rolled at a lower temperature more metal be added to the bottom of the flange of the present American Society of Civil Engineers' section, Mr. Webster says this would not prevent the metal in the head from breaking off in the plane of the web as at present, this breakage occurring in all weights of rails and being generally due to piped steel or segregation. He adds that while there might be some advantage in using one standard width of head for rails of 80 pounds and more, increasing the thickness of head and flange as the weight increases, he would not recommend any change of section until every means had been exhausted for producing better steel.

Percival Roberts, Jr., while agreeing in the main with the conclusions of the majority, presented a minority report. It calls attention to the fact that certain failures in service, especially of rails of maximum sections, can be traced to the uneven temperatures of the various parts of sections when finished at the rolls, due to the large cross section of head and relatively small areas of flange and web. This can only be remedied by a radical change in design. Mr. Roberts believes that specifications as prepared by the user should extend only to the quality of the finished material both chemically and physically, as fixed by rigid requirements, but details and methods of manufacture should be left entirely to the producer. He agrees with the proposed specifications as to quality and requirements of finished material except as to carbon and manganese. If a discard be required he would have it measured by a certain percentage of the ingot and not by the length of the bloom. He does not consider that the proposed method of regulating the finishing temperature will accomplish the desired result, as the rail may be held prior to entering into the finishing pass or at some other point until the proper finishing temperature is attained, while what is sought is the working of the ingot throughout at a lower temperature than prevails in present practice. He dissents from the raising of the carbon and manganese content for heavier rails, since the heavier the rail the more uneven the temperature at finishing throughout the various portions of the section, and the higher the carbon the more susceptible the steel to heat treatment, heavier rails having a higher temperature of the head at finishing; conversely, the higher the carbon the lower the working temperature should become. As long as such variations in cross section of maximum weights are continued a high content of metalloids will always be a menace to successful service, not alone measured by wear of individual rails, but also by uniformity of results and freedom from sudden breakage. Mr. Roberts favors even a lower carbon content than proposed in the majority report, coupled with such physical requirements of finished material as will necessitate a rolling of the material at a lower temperature than now practiced.

The Committee Continued.

While the Committee on Rails asked to be discharged it was thought best, after some discussion at the meeting, to accept the report and place it on file and to continue the committee, allowing any members who so desired to retire from the committee and have their places supplied. It is the expectation that the report will be made a subject of discussion at the meeting of the society in June, 1906.

Gas Engines at British Steel Works.—The London *Times* Engineering Supplement refers to the recent displacement of steam by gas engines at the steel works of Samuel Osborn & Co., Sheffield, Eng. A feature of the gas producing operations is the cleanness of the gas delivered to the engines. This is accomplished by a special device called a centrifugal tar separator. When the gas has passed through the coke scrubbers it is drawn through this separator, into which are introduced two small jets of water. The vanes of the separator throw the gas and the water into motion, and the water, finely divided, picks up the tar, which is sent out to the rim of the separator by centrifugal force and drawn away into the tar sump. After passing through the tar separator the gas goes through the sawdust scrubbers to be further cleansed and dried. In the power house is an engine of an entirely new type, of which only two other examples are to be found. It is a three-cylinder vertical gas engine of 200 horse-power, with pistons 15½ inches diameter by 19-inch stroke, coupled to a 120 kw. compound-wound electric generator. The engine works on the Otto cycle, and the supply of gas is regulated by a centrifugal governor, and not on the hit-and-miss principle, each cylinder getting an impulse in two revolutions, so that there are three impulses in two revolutions.

More 100-Ton Freight Cars.—The Allis-Chalmers Company, Milwaukee, has ordered from the West Milwaukee shops of the Chicago, Milwaukee & St. Paul Railroad Company two 16-wheel flat cars, with a capacity of 100 tons each. The necessity for cars of this capacity is occasioned by the fact that the Allis-Chalmers Company is now confronted with the problem of transporting huge engine bed plates, weighing approximately 80 tons, for the large blowing engine purchased some time ago for the Carnegie Steel Company's plant at Sharon, Pa.

The Farrar Transportation Company, Limited, Collingwood, Ont., Can., has decided to build a 9000-ton steel steamer, and the contract will probably be given to the Collingwood Shipbuilding Company.

Air Compressors at the Champion Copper Mine Painesdale, Mich.

The Champion mine at Painesdale, Mich., is one of several large properties owned and operated by the Copper Range Consolidated Copper Company. Under present average conditions of operation its output is about 2,000 tons of ore per day, which is hoisted through four shafts well scattered over the extensive property. High grade machinery equipment are characteristic of the Michigan copper mines, and that of the Champion is no exception. Cheap power is but one factor in securing low operating cost, and the air power plant must of necessity attain a high standard of economy.

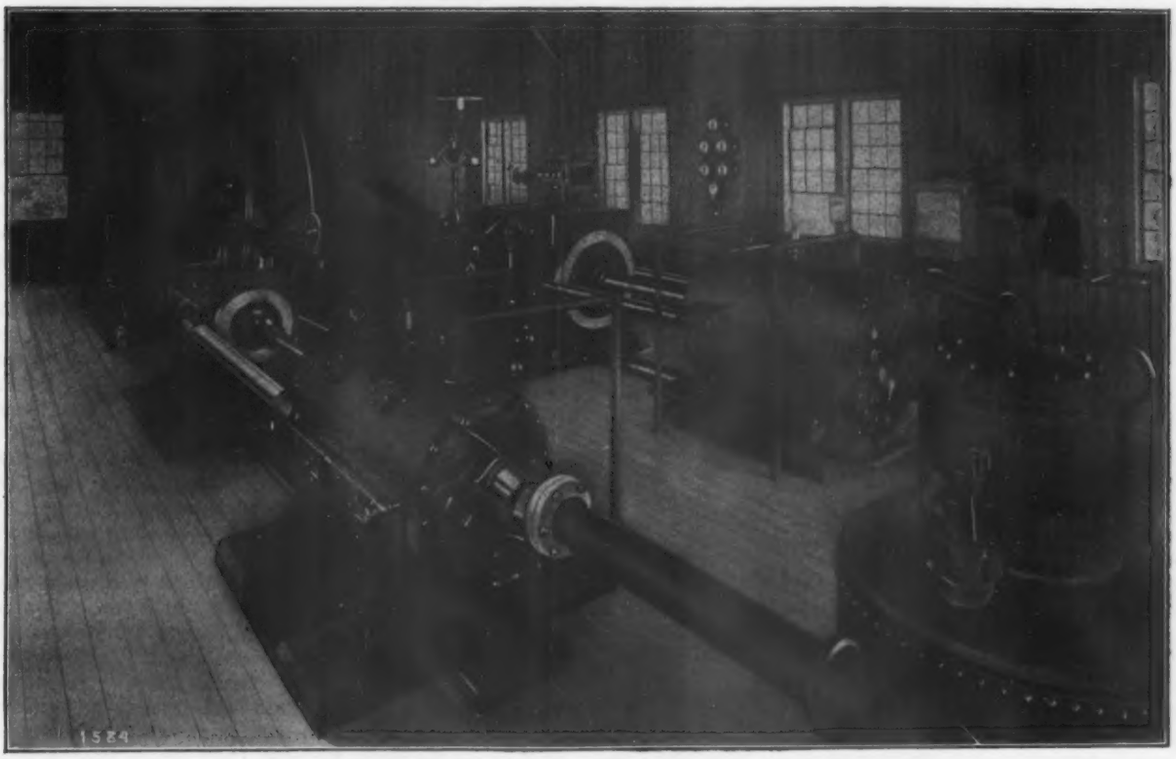
One of the largest compressors in the district is located on this property and was built by the Ingersoll-Sergeant Company, New York. It is a duplex Corliss type with cross compound condensing steam cylinders and two stage air cylinders. Steam is supplied at 130 pounds pressure by a battery of high pressure boilers in an adjacent boiler house. The exhaust passes to a Worthington condenser located, with its pumps, in the basement below. A vacuum of 20 inches is maintained. The steam valve gear is of standard Corliss release type. Automatic regulation is secured by a governor in which the usual fly balls are supplemented by a governor cylinder through which receiver air pressure operates to vary the cut off on both cylinders, adjusting the speed to the demand for air and maintaining air pressure constant. The main frames are of standard heavy duty tangye pattern, and the cranks are of balanced disk type. The high and low pressure air cylinders are completely water jacketed on heads and barrels. Cold air is drawn from outside the building through a duct terminating in an intake bracket supported on the compressor foundation. A Sergeant piston inlet valve handles the intake on both high and low pressure cylinders, and direct lift discharge valves are used. Between air cylinders, 20¼ and 32¼ inches, and the stroke is 48 inches in diameter and 13½ feet high, with tinned brass tubes through which the cooling water circulates.

The steam cylinders are 18 and 36 inches in diameter; air cylinders, 20¼ and 32¼ inches, and the stroke is 48 inches. The normal speed is 72 revolutions per minute, at which the free air capacity of the compressor is 3100 cubic feet per minute. The air pressure is 80 pounds.

The compressor building is an iron covered steel frame structure lined with sheathing and floored with matched wood. A solid concrete foundation capped with finished stone supports the compressor. The illustration shows the interior of the engine room, with the intercooler in the right foreground. The stairway on the right leads to the basement, which contains all auxiliaries, beside an engine driven generator for lighting purposes.

In a separate building close at hand is an older Ingersoll-Sergeant air compressor, which at one time furnished all the air required for the rock drills. To-day it is maintained as an auxiliary to the larger compressor. It is a straight line type, steam driven, with simple steam and air cylinders 18 and 18¼ inches in diameter, respectively, and a stroke of 24 inches. At the rated speed of 94 revolutions per minute its free air capacity is 556 cubic feet per minute, delivered at 80 pounds pressure. The steam end is fitted with adjustable cut off valves of Meyer type, and Sergeant piston inlet and direct lift discharge valves handle the admission and discharge of air.

There was a period of two years in the history of the Champion mine when rapid development threw an unusually heavy load on these two compressors. During this time these machines ran continuously, carrying jointly an average load of 56 rock drills, seven pumps and four small hoists used for light work, and there were no breakages and no delays directly chargeable to these machines. Now that conditions are somewhat relieved the larger compressor easily does the work of its section of the mine, while the smaller one stands ready for emergencies.



A View in the Air Compressor Plant at the Champion Copper Mine, Painesdale, Mich.

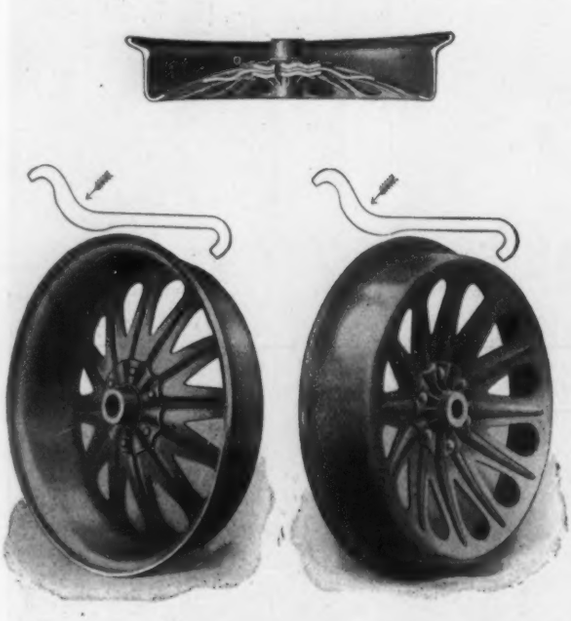
Car Famine on German Railroads.—There has been a good deal of comment in the German trade journals on the car famine on German railroads, more particularly that of the Prussian-Hessian Railway Company. The shortness of rolling stock has been noticed for more than a dozen years, close economy having been practiced in the matter of building new equipment. In recent years the investments in rolling stock have been larger, being for 1902 and 1903 about $25,000,000 each, for 1904 $35,000,000 and for 1905 about $37,500,000. The expenditure of last year represents the addition of 17,700 cars. Still the lack of rolling stock in the latter part of 1905 was very noticeable and interfered with industrial operations in a marked way. The requirements in the Upper Silesia coal

district in October were 25.7 per cent. larger than in the corresponding month of 1904, while those of the pine districts were 41 per cent. larger.

The Kalamazoo Pressed Steel Car Wheel.

The pressed steel wheel for hand and push cars herewith illustrated is manufactured by the Kalamazoo Railway Supply Company, Kalamazoo, Mich. In the special process by which it is made the metal is compressed in successive operations, increasing the thickness at the greatest wearing points, and rendering it harder and of greater tensile strength than originally. By the use of special machinery constructed for the purpose the metal is gathered so as to increase the thickness in the flange and at the throat of the flange from ⅛ to 3-16 inch. The metal plate used in the construction of the wheel is ¼ inch thick, which thickness, it will be seen, is nearly doubled at the points mentioned.

The first step in the manufacture of the wheel is the shearing of the plates into circular blanks. These are then roughly shaped at white heat under hydraulic pressure, and are then reheated and run through a finishing machine which gathers the metal in the flange and increases the thickness at the tread. From the finishing machine the wheel passes at red heat to another hydraulic press holding dies that are used for sizing, so that every wheel when completed has exactly the same circumference. The hub and flange are pressed into place under hydraulic pressure and the riveting is done cold in the same way.



The Two Sides, a Cross Section and Enlarged Rim Sections of the Kalamazoo Pressed Steel Car Wheel.

The wheel is dished more at the center than is usual, and with the deeper and stronger corrugations in the spokes the weight bearing qualities are greatly increased. The flange of the wheel is made to conform to M. C. B. standard in hight and thickness, and will not form a cup or receptacle for taking up sand or gravel which readily drops into the axle bearings.

Milwaukee Trades and Founders' Association.—At the annual meeting of the Milwaukee Trades and Founders' Association, held in Milwaukee, January 24, the following officers were elected: President Chas. E. Sammond, Stowell Mfg. & Foundry Company; vice-president, W. J. Turner, Western Malleable & Gray Iron Mfg. Company; treasurer, Clarence Falk, Falk Mfg. Company; secretary, W. J. Fairbairn. Directors—Geo. H. Smith and Geo. F. Fargoes. The report of the secretary showed that there are 32 firms and corporations holding membership, and the report of the treasurer showed a balance of $2000, with all debts paid. At the conclusion of the business session the members of the association, with superintendents and foremen of the different institutions represented as guests, gathered at the banquet table. A. J. Lindemann of the Lindemann & Hoverson Company, the retiring president, confined his remarks to a history of the organization, and in conclusion congratulated the association on the freedom of its particular industries from labor troubles during the past year. S. L. G. Knox of the Bucyrus Shovel Company gave his views on the Panama Canal, gathered from personal inspection of the proposed work. He stated that the plan to cut the canal across the isthmus is a perfectly feasible undertaking, and that while it is a work of vast proportions it will not require as much skill as did the Chicago drainage canal.

The Buffalo & Susquehanna Iron Company.

In connection with the announcement of a recently authorized issue of $1,500,000 of 20-year 5 per cent. debenture gold bonds of the Buffalo & Susquehanna Iron Company, of which $1,000,000 are now being offered in New York, the statement is made that the new issue is for the purpose of providing funds for the purchase of additional ore properties and to provide additional working capital. The company has outstanding $3,000,000 first mortgage 5 per cent. gold bonds which mature June 1, 1932, with provision for retiring $100,000 each year, beginning June 1, 1907. The indebtedness, including the two issues of bonds, it is stated, will not exceed 60 per cent. of the actual cash value of the plant and properties. The capital stock is $1,000,000, paid in in cash.

The first furnace at Buffalo was blown in on September 27, 1904, and the second furnace on July 6, 1905, the two now having an output of nearly 700 tons a day. Concerning the ore and coal properties of the company and the financial operations thus far a statement by President William A. Rogers, dated December 1, 1905, contains the following:

"The company owns a leasehold in iron ore mines in the Mesaba Range near Hibbing, Minn., which mines are estimated to contain upward of 20,000,000 tons of high grade ore. This valuable property is being rapidly developed. It is expected it will soon supply the company's entire needs for that kind of ore. The company owns also, by similar leasehold, a tract of 80 acres of land at Iron Mountain, Mich., supposed to contain about 10,000,000 tons of coarser ore suitable for mixing with the ore of the Mesaba mine. The company controls 2,900 acres of coal land situated at Tyler and Sykesville in Western Pennsylvania and estimated to be underlaid with 22,000,000 tons of good coking coal. Through the Cascade Coal & Coke Company, a subsidiary corporation, the iron company mines its own coal and manufactures its own coke, some 300,000 tons of which are required annually. The coal mines and coke ovens operated under the control of the iron company are producing all the coal and nearly all the coke needed, and when the remaining ovens, now under construction, are completed there will be 600 in operation, which will meet all the requirements of the company. . . . At this date one furnace has been in operation about fifteen months and the other about six months. Up to October 31 the earnings have been sufficient to pay the interest charges, overcome all extraordinary expenses incident to the starting of a new plant and to leave a surplus of $160,000 for that period. As stated above, the second furnace was blown in on July 6. The net earnings, before paying interest, for the current fiscal year from July 1 to October 31, a period of four months, have amounted to $150,000, or on the basis of $450,000 per annum. For the three months of August, September and October, during which both furnaces have been in full blast, the net earnings, before paying interest, have amounted to about $125,000, or at the rate of $500,000 per annum. The amount required to pay the interest on both issues of bonds is $225,000 per annum, so that the surplus above interest charges is at the rate of from $225,000 to $275,000 per annum, with no apparent reason why future conditions should not be better than those of the past."

Customs Contentions.

Why New Cases Are Brought Forward.

The growing practice on the part of the Treasury Department to revive customs controversies by bringing what are generally known as "new cases," after the Board of United States General Appraisers and the courts have passed upon disputed questions of tariff classifications and values, is strongly resented by importers in all lines, although official records will undoubtedly show that the handlers of metals particularly have had more than their share of annoyance in this direction. Under former Treasury administrations the rule followed by the Government was to make out as strong a case in support of its contention as was possible, and to abide by the decision of the tribunal of last resort. If the Government was defeated in a test case in the Court of Appeals or the Supreme Court, the decision of the highest tribunal was acquiesced in by the Treasury Department and proper refunds of excessive duties were made to the importers successful in the litigation. With such procedure importers had no fault to find, as business could be adjusted in a manner to harmonize with any new conditions created by the action of the judiciary.

Under the present Secretary of the Treasury, there has been displayed a determined disposition to resist to the utmost the making of refunds. The Secretary has stated to a representative of *The Iron Age* that the condition of the Treasury finances did not allow the refunding of duties which had been held by the courts to be excessive until every resource of the Government had been exhausted in the effort to convince the judiciary of the correctness of the Treasury's contention. As illustrative of the Secretary's position, he cited the fact that after the courts and the Board of Appraisers had decided the Indian rupee case seven times adversely to the Government, his persistency in bringnig "new cases" finally resulted in a victory for the Treasury Department. Many other instances might be cited where issues supposedly settled by the courts and the Board have been re-opened.

The so-called "steel strip" duty case, now having its second run through the courts, is only one case in point, although others might be mentioned. When it is borne in mind that every customs test case directly affects every other importation of similar merchandise, the annoyance and disturbance to trade in the line concerned are apparent. Pending the determination of cases in the courts, all importers' protests raising identical issues to the test case are placed on the suspended files of the Board of Appraisers, and no relief can be granted until the test litigation has been disposed of. Foreign manufacturers, exporters, and importers on this side, as well as domestic consumers, are kept in suspense by the practice at Washington of beginning anew litigation long closed or authoritatively passed upon by the higher courts.

Automobiles Repaired Abroad.

Judge Hazel, in the United States Circuit Court, has rendered a decision of considerable interest to automobilists regarding the question of how far an automobile may be repaired abroad and yet enter the United States free of duty as a household effect. The machine, the subject of the court's decision, was owned by Mrs. Collis P. Huntington, and was imported into this country, exported, and then re-imported, duty being paid on the original importation. Mrs. Huntington objected to the action of the Collector of Customs at New York in levying a duty of 45 per cent. on the machine, when it had already stood an assessment the first time it was brought to the United States. The records showed that the vehicle had been used abroad by the owner for more than one year, and, further, that it was not intended for any other person or for sale.

It was urged by the Government representatives that the automobile had been advanced in manufacture or improved in condition to such an extent that it became dutiable under paragraph 193, at the rate of 45 per cent. It was brought out at the trial that the machine had previously, in 1902, been imported and assessed for duty, and later, in August, 1903, was exported, but first registered at the Collector's office to avoid payment of duty on its return to the United States. In deciding that the second assessment of duty on the machine was proper, Judge Hazel says, in part:

> Upon the hearing I had an impression that the repairs to the machine were necessary because of ordinary wear and tear. An examination of the record, however, does not bear out my original opinion. The motor has been overhauled, new parts substituted in place of old, and the body has been repaired and newly upholstered just prior to the return of the vehicle to this country. Under such conditions the conclusion is sound, I think, that the machine while abroad received such extensive repairs as materially to improve it in condition beyond its condition when exported. In fact, a new manufacture, in part at least, would seem to have been the result. If the repairing had consisted simply of painting and adjusting parts of the machine which had become impaired and defective by reason of its ordinary use a more liberal construction of the provision of the tariff act would be justified.

Iron Sand.

C. D. Bunker & Co., San Francisco, have been defeated in an attempt to obtain a reduction in the assessment on so-called iron sand, which the collector classified as a manufacture of metal, with duty at the rate of 45 per cent. It is claimed by the importers that the merchandise should be admitted at the rate of 4-10 cent per pound under the provision in the tariff act for steel sand. General Appraiser Fischer, who writes the decision for the customs tribunal, says that the invoice, protest and appraiser's report agree that the merchandise is iron, and that therefore no good reason exists for disturbing the assessment.

Galvanized Iron Tubing.

The board has settled adversely to the importers a controversy relative to the classification of galvanized iron tubing and connections. Pitt & Scott, New York, acted as forwarders for the importers, whose names are not divulged. It appears that duty was assessed on the tubing at the rate of 35 per cent. and on the connections at 45 per cent. It was claimed by the importers that the goods were dutiable either at 2½ cents per pound or at 10 or 20 per cent., as nonenumerated manufactured or unmanufactured articles. The compound duties levied by the collector were allowed to stand by the board.

Miniature Penknives.

The board in a decision by T. S. Sharretts holds that miniature penknives about 1 inch in length and having a single folding blade cannot be assessed by the customs authorities at the high rate of 60 per cent. as jewelry. The handles of the penknives are covered with imitations of bone and shell, respectively, and are provided with loops. The customs court finds that the articles are composed in chief value of metal and that they are not pen or pocket knives nor toys, within the meaning of the tariff act, nor are they commercially known as jewelry. The claim of the importers, A. Strauss & Co., New York, for assessment as manufactures of metal at the rate of 45 per cent was sustained.

A Decision Regarding Protests.

In a decision by W. F. Lunt, the Board of Appraisers has laid down the principle that importers' protests are not invalid because of the failure to specify particular paragraphs in instances where the correct rate of duty has been quoted. It seems that George W. Kavanaugh, Albany, N. Y., objected to the classification imposed on imported merchandise by the surveyor of customs at that port, and filed an official protest with the customs court. When the case came up for hearing before the board, the Treasury Department contended that the claim should be overruled owing to the omission of the number of the paragraph under which the goods were claimed to be dutiable, although, as a matter of fact, the importer did name the rate of duty he considered applicable. The board finds that the protest was not defective.

Ferro Alloys.

The Board of General Appraisers, in a decision by I. F. Fischer, has sustained claims filed by the Goldschmidt Thermit Company, O. G. Hempstead & Son and Dana & Co., New York, for lower duty on importations of ferrotungsten, chrome metal, manganese, ferrowolfram and similar substances. The collector assessed the products

at the rate of 20 per cent., but this classification is deemed erroneous by the board, which finds that the merchandise is dutiable, as claimed, at the rate of $4 per ton.

Needles and Bodkins.

The board has denied a claim filed by Marshall Field & Co., Chicago, regarding the rate of duty to be imposed on furnished needle cases containing an assortment of darning needles and one or more bodkins in addition to an assortment of hand-sewing needles. Duty was assessed at the rate of 45 per cent. as manufactures of metal, the values given on the invoices indicating that the contents exceeded in value the cases. The importers maintained that the articles were free of duty under the provision for hand-sewing needles.

Welding Material.

The Board of General Appraisers January 25 rendered a decision dealing with the classification of metal and borax welding material. The merchandise was imported by F. R. Phillips & Sons Company, Philadelphia. Some of the material was in the form of powder and some in the form of plaques in which the material was fused into a wire mesh. The Custom House officers assessed duty on it at the rate of 45 per cent. under the provision in the tariff law for manufactures of metal. Several claims were filed by the importers, one of which alleged the article to be a chemical compound. The Board finds that the collector was not in error in his levy of duty.

Iron and Manganese Alloy.

The William Cramp & Sons Ship & Engine Building Company, Philadelphia, has won an important victory in the United States Circuit Court of Appeals for the third circuit. The court reverses the Collector of Customs and the Board of Appraisers in their assessment of duty on merchandise invoiced as "iron and manganese alloy." The ruling of the court has the effect of reducing the rate of duty on the product from 45 per cent. to 20 per cent. The material is imported in the form of pigs, the iron and manganese alloy being used to harden bronze, copper and tin alloy in the manufacture of antifriction bearings, &c. The importers objected to the heavy rate demanded by the collector and took an appeal to the Board of Appraisers, which sustained the collector. The company carried the case to the Circuit Court, claiming that the merchandise was properly dutiable as ferromanganese, or as a crude metallic mineral substance. The court decided that the collector and board were in error and reversed the lower tribunals, holding that the merchandise was clearly within the provision for "crude metallic mineral substances" at the rate of 20 per cent. This finding has now been affirmed by the Appellate Court, and if the Supreme Court denies the Government a writ of certiorari the Cramp Company's victory will be complete.

Machine Tool Price-Lists.

While the machinery dealers have succeeded in their effort to induce the builders of machine tools to adopt a uniform leaf it is complained that manufacturers do not sufficiently condense their lists. The result is that one fat price book is not sufficient for the salesman's purpose, if his house carries a considerable variety of lines, as most machinery houses do nowadays. Some of the machine tool builders have caught the idea from the dealer's point of view and have condensed their price-lists to a minimum, yet without detracting from their value for the information obtained. Everything needed by the salesman on the road is retained. But other machine tool builders have gone to the other extreme and have included in their lists pretty much the entire contents of their catalogues, even to illustrations. When a single manufacturer sends price-list leafs to the number of 20 or thereabouts the salesmen make objection, as their books fill up too rapidly, until they have to be continued into a second volume. Now they are striving to impress the necessity of condensation, and, equally important, the printing of lists on both sides of the leaf, where it is necessary to cover more than a single side.

Large Contracts for Allis-Chalmers Engines.

The Allis-Chalmers Company, Milwaukee, Wis., through its Pittsburgh office, has recently made some very large sales of heavy machinery. The Pittsburgh Plate Glass Company purchased for its Crystal City, (Mo.) plant a 5000 horse-power vertical horizontal engine, coupled directly to a 3500 kw. alternating current generator. This engine was in service during the entire time of the Louisiana Purchase Exposition, where it was universally known as the Big Reliable. It is fitted with a horizontal 44-inch diameter high pressure cylinder and a vertical 96-inch diameter low pressure cylinder, each 60 inches stroke, and is designed to run with a steam pressure of 150 pounds at a speed of 75 revolutions per minute. The hight of the engine above foundations is 39 feet 2 inches; fly wheel diameter 25 feet; weight of fly wheel 300,000 pounds. The shaft is a hollow forging 37 inches in diameter with weight of 61,000 pounds. The weight of revolving parts, crank, shaft, wheel and generator is 514,000 pounds. The total shipping weight of engine and generator is 1,440,000 pounds. The same company also bought of the Allis-Chalmers Company one of its 1700 horse-power twin tandem gas engines, of the Nurnberg type, coupled directly to one of its 1000 kw. alternating current generators. It further bought two 300 horse-power and two 500 horse-power motors, with all necessary electrical appliances to complete the plant.

The Allis-Chalmers Company sold to the Carnegie Steel Company for its South Sharon plant what will probably be the largest and heaviest reversing blooming mill engine thus far built. The machine will be a horizontal twin tandem compound condensing reversing engine. Each side of this engine will be fitted with one 42-inch diameter high pressure and one 70-inch diameter low pressure steam cylinder, each 54 inches stroke. The shaft will have three bearings, each 30 inches diameter by 48 inches long, and will be hollow and oil tempered. Shaft, cranks and crank pins will be forged in one piece. One crank pin is 20 inches in diameter, but the inner crank pin, which is closest to the blooming mill, will be 26 inches in diameter, and both will be hollow. The shaft will have a finished weight of 50,000 pounds. The total shipping weight of this machine will be approximately 1,400,000 pounds. This type of engine, as applied to reversing mill engines, is novel, there being only three of the type in operation in this country at the present time. The steam valves of the cylinders are of the piston type, there being one in the high and two in the low pressure cylinder. The gear is the Marshall-Reynolds gear, all movements being pin movements, thereby entirely eliminating the link, which is very expensive in the way of maintenance.

The Allis-Chalmers Company also sold two of what are said to be the largest single mill engines in the country, to the Carnegie Steel Company, for its Edgar Thomson plant, consisting of one right and one left hand tandem compound condensing mill engine, each fitted with a 50-inch high pressure and 78-inch low pressure steam cylinder, 60 inches stroke. The wheel of each of these engines will be a steel casting of the Allis-Chalmers standard type sectional built wheel. One will have a diameter of 25 feet, weighing 224,000 pounds, and the other will have a diameter of 20 feet, weighing 160,000 pounds. The shafts will be nickel steel forgings, turned to a diameter of 34 inches in the wheel fit and 30 inches diameter in the journals. The valve gear on this engine will be the Reynolds-Corliss automatic three-quarter stroke gear, made exceptionally heavy. The regulator will be the Allis-Chalmers special weighted pattern for operating both the high and low pressure steam cylinders. The shipping weight of each of these engines will be 850,000 pounds. The same company also purchased for its Edgar Thomson Bessemer plant one standard 46 and 86 and 84 and 84 x 60 inch steeple cross compound condensing Bessemer blowing engines, having a shipping weight of over 900,000 pounds.

The Illinois Steel Company recently purchased from the Allis-Chalmers Company three 46 and 88 and 84 and 84 x 60 inch horizontal cross compound furnace blowing engines, each weighing over 1,100,000 pounds.

The Republic Iron & Steel Company bought for its Youngstown plant one 46 and 86 and 78 and 78 x 60 inch horizontal cross compound Bessemer blowing engine; three 52 and 96 x 60 inch high pressure and two 96 and 96 x 60 inch standard disconnected long crosshead type compound condensing furnace blowing engines.

Among other sales of heavy machinery the Allis-Chalmers Company sold to the Northwestern Iron Company, Mayville, Wis., three 44 and 84 x 60 inch high pressure standard long crosshead type furnace blowing engines; to the Virginia Iron, Coal & Coke Company, four 44 and 84 x 60 inch high pressure and one 84 and 84 x 60 inch low pressure standard long crosshead type furnace blowing engines; to the Carnegie Steel Company for its Lucy Furnaces, one 44 and 84 x 60 inch and one 84 and 84 x 60 inch vertical standard long crosshead disconnected compound condensing furnace blowing engines; to the American Steel & Wire Company, for its Newburg Works, one 32 and 64 x 60 inch horizontal cross compound rope drive mill engine of the heavy duty type.

Tariff Revision in Canada.

TORONTO, January 27, 1906.—Interest in the work of the Tariff Commission is now keener and more general than at any former stage. For one reason, the commission is now near the end of its hearings. It will hold the last of the sessions of the Maritime Provinces tour on Monday, when it will receive deputations at Halifax. It will then return to Ottawa, where three sittings will be held, in the course of which it will hear all who appear before it with petitions relating to the duties on agricultural implements, on rolled iron and steel products and on sundry other articles. The Ottawa sittings will bring its inquiries to a close. It will then apply itself to the work of organizing the mass of evidence it has collected and striking a balance between its casting up of the testimony for protection and its casting up of that against protection. The work of digesting the contents of its record books and of drafting the bill, which is to be the issue of its inquiries, will keep it busy until the meeting of Parliament in March. The tariff may be said therefore to be now in the making. The field work is done, the specimens are collected and the work of classifying and generalizing is begun.

Revenue and Trade Relations.

That the bill presented will be purely the resultant of the volumes of conflicting statements the commission has gathered nobody imagines. The commission endeavored to get the sense of the country on the one question as to what tariff conditions were best for trade. It was not consulting the people as to the most desirable arrangement of the duties for purposes of revenue, not did it ask advice on the matter of adapting its fiscal plan so as to affect external relations, whether with Great Britain or with other countries. At the same time the revenue problem and the reaction of duties on outside relations will be largely considered and provided for in the new bill. These matters of policy the Government will have to think out for itself, and its conclusions in respect to them will perhaps greatly modify the scheme that will be drawn from the data collected in the hearings.

The Preference.

The structure of the new tariff has more than once been indicated by the Finance Minister. Besides the free list there will be a column of maximum duties and one of minimum duties, with possibly one between these. Thus retaliation and reciprocity will be provided for, as well as unprejudiced relations. There is some speculation concerning the footing on which trade with Britain will be placed in the new scheme. It is known that at the last colonial conference, held in London, Sir Wilfrid Laurier and Mr. Fielding made proposals of reciprocity with Britain. This was at the time of the coronation. Britain had made what seemed to be a departure from free trade by placing a duty on wheat and flour. These taxes on breadstuffs were afterward repealed, the excuse given for their adoption being that they were required as war revenue. At all events they gave rise to expectations of a preference to Canada. It was thought not unlikely that they might be eventually increased and that other products might be added to the British list of dutiable articles. Discounts or exemptions might be granted to Canada. The outlook for mutual preference seemed to have brightened. Sir Wilfrid, as has been mentioned, proposed a new Canadian preference in return for a British preference. He would substitute for the present horizontal act of 33 1-3 per cent. in favor of Britain a selected list of British articles to be admitted on special terms, Britain on her side giving a tariff concession to Canadian foodstuffs. Nothing came of that proposal, but as time passed Mr. Balfour tended more and more to the Chamberlain idea, and if he had triumphed in the present elections he would undoubtedly have entertained the idea of a *quid pro quo* arrangement with Canada. Now that his party has been so completely beaten at the polls and that a Government committed in the strongest terms against protection and preference is in office the prospects for a mutual preferential arrangement between the mother country and Canada have disappeared. How will this affect Mr. Fielding's tariff plans? If he started out with the idea of retaining the preferential clause for the special benefit of Britain the change in Government there may have wrought a change in his intentions. He will scarcely forget that Sir Henry Campbell-Bannerman, Mr. Asquith and other members of the present British Government belittled Canada's preference to the United Kingdom when they were in opposition and that their press doubted that it was of much influence as a factor in the comparatively small increase of Britain's sales here. In short, it will scarcely strike Mr. Fielding that his policy of establishing more intimate trade relations with Great Britain has proved the success that it at one time promised to be. The current of protection sentiment in the country will not tend to strengthen his convictions as to the benefit of the preference.

Government's Needs.

Not only is protectionist sentiment strong in Canada, scarcely less so on one side of the House than the other, but also the need of abundant revenues has become permanent. The Dominion's chief source of these is the customs. Two new provinces have been created; they must receive their subsidies out of the Dominion fund, and the legislatures of all the old provinces are calling for increases in the federal grant. Bonuses to railroads and other aids are rapidly increasing. It is not easy to see how the Government could manage on a smaller income from the tariff than it now receives. In the last fiscal year, though it had a surplus of $7,863,089 on consolidated revenue account, it had an adverse balance on capital account which absorbed the surplus and left a deficit of $5,356,448 on the year's operations.

Iron and Steel Protection.

In the hearing at Sydney, Nova Scotia, F. P. Jones, general manager of the Dominion Iron & Steel Company, asked that the bounties on iron and steel be put back to the rates at which they were in the last fiscal year—namely, $2.25 per ton on pig iron made from Canadian ore, $1.50 on pig iron made from imported ore, $2.25 on steel ingots. These rates he urged the Government to re-establish and retain unchanged until June 30, 1908. He asked also that a duty be placed on barbed and galvanized wire. Out of 37,000 tons of these descriptions of wire used in Canada in the last fiscal year he said that the small quantity of 3000 tons was made in Canada, and this limited tonnage was made under an agreement with United States manufacturers who not only dictated to Canadians what quantity they might make but also the price at which it must be sold. He declared that if the imports of these wires from the United States are allowed to continue as at present the company's rod mill can be operated for only a portion of the year.

Harvey Graham of the Nova Scotia Coal & Steel Company pressed the case for a continuance of the present duty on bituminous coal. It will be recollected that earlier in the winter the Algoma Steel Company at Sault Ste. Marie made a strong appeal for free coal, required as the raw material of the coke the company proposed to manufacture for its own consumption in steel making.

C. A. C. J.

THE IRON AGE

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National Control of National Business Questions.

More and more are modern business questions demanding uniform national settlement. This is in accordance with the natural development. A citizen of New York is theoretically a citizen of the United States and possesses the same privileges in every other State that he does in his own State. Practically, however, he does not. If he is engaged in business which takes his representatives into other States they are frequently hampered by laws which have been enacted for the purpose of giving as much trouble as possible to him and other outsiders like him. Especially is this the case with those who conduct business under a corporate form. A corporation which is not actually domiciled therein is regarded by the law makers and the courts of many States as being as thoroughly alien as though it had been chartered by some power outside the jurisdiction of the United States. It is in fact alluded to specifically and definitely, not to say odiously, as a "foreign" corporation. The corporate form has been found such a convenience in the transaction of business that it is daily becoming more common even in commercial lines. Hence there are any number of small corporations engaged in business extending over State lines, but often confining their operations to such a restricted territory that their representatives do not visit more than two or three States. Yet if one or more of these nearby States should have enacted laws bearing onerously on foreign corporations these little corporations must observe all such enactments rigorously or they get into trouble in collecting accounts due them. The laws may have been passed primarily for the purpose of harassing and fleecing big corporations, but the little ones are not permitted to plead immunity because of their size.

With modern methods of transportation and intercommunication there are few branches of trade in which the citizens of one State do not feel very materially the competition of the citizens of another State. The principal exceptions are of course the building trades and public service functions. But wherever the product of man's industry is capable of transportation to another locality competition between widely separated producers is felt. In many such instances the producer in one locality may be seriously handicapped by State enactments from which his competitors in other States are free. Take the case of those lines in which child labor can be largely employed. Certain States have very properly thrown safeguards around the rising generation by prohibiting the employment in factories of children under a certain age, and even then they must have acquired the rudiments of an education. Other States, however, have either no laws on the subject or fix the age limit considerably lower or take no cognizance of the educational question. Undoubtedly the manufacturers of the State imposing the greatest restrictions on child labor are placed at a disadvantage in competing with unscrupulous employers of child labor in other States. Another matter in which inequality is observed is in the application of eight-hour laws by municipalities in States in which such action is not unconstitutional. Here the local manufacturer or business man is placed at a disadvantage if the municipality is in need of something capable of transportation. Outside competitors whose men work nine or ten hours a day without restriction by the municipality can underbid the local manufacturers.

Clearly the time has fully arrived when questions which affect competing business interests of citizens of the different States should have uniform treatment throughout the length and breadth of the nation. A resident of Maine engaged in manufacturing should receive precisely the same consideration in Texas or California or Minnesota that he does in his own Commonwealth. For infraction of the rights of others the same penalty should apply against him everywhere and his grievances should likewise have equal consideration in every State. When the founders of the nation decided that no State should be permitted to levy imposts on articles brought in from another State they laid down a principle which is capable of much wider application. That wise constitutional provision has prevented any State from discriminating directly against the business interests of another State. Indirect discrimination, however, has not only grown up but it is becoming more pronounced. If it continues it will breed hostility between States, which is greatly to be deprecated. A solution of this question would be such harmony of action by the legislatures of all the States that competing business interests would find the same laws affecting their operations, no matter in what States they transacted business. But this would be too much to expect of 45 different legislative bodies. The only really practical method is to have Congress take charge of all matters in which the business interests of the citizens of any State compete or conflict with similar interests of the citizens of other States. This would of course be considered by some as Federal encroachment on State prerogatives, but surely wherever the business interests of the citizens of the several States conflict the authority of the United States should be paramount.

Steel Making and Foundry Iron Outputs.

The relative pig iron production of the steel companies of the country and of the merchant furnaces in 1904 and 1905, as shown by the pig iron statistics of *The Iron Age*, indicates how largely the expansion of business in the iron trade last year was due to the demand for steel mill products. Foundry iron consumption increased materially last year over that of 1904, but it was not at all comparable to the increase in steel-making irons. The monthly blast furnace returns made to this office permit of the following division of the pig iron made by the Northern steel companies and that produced by the merchant furnaces, including all the furnaces in the Southern States, the figures representing gross tons:

	Production steel companies.	Production merchant furnaces.	Steel companies' percentage of total.
Year 1904.....	10,195,656	6,301,377	61.6
First half 1905.....	7,048,786	4,114,389	63
Second half 1905.....	7,625,058	4,141,767	65

It will be seen that the increase in production in the second half of last year over that for the first half was almost entirely due to the increased output of steel company furnaces. In addition it is to be noted that the large steel companies bought practically no pig iron in

the first half of last year, while in the second half their purchases amounted to between 350,000 and 400,000 tons. As merchant furnace stocks were not reduced to that extent between July 1 and December 31 the presumption is that the consumption of foundry iron in the second half of the year did not vary greatly from that of the first half. Unlike previous years of similar expansion in demand, the prosperity of 1905 served to call out of idleness few of the less fit blast furnaces, which are, to a large extent, producers of foundry iron. On January 1, 1905, 243 coke and anthracite furnaces were in blast in the United States; on July 1, 270 and on January 1, 1906, 286. The small gain in active furnaces in the second half of 1905 is noticeable and shows how the hard campaign of the past year has been forcing out of blast stacks that had been straining for months for high outputs in view of the profitable market for their product. It is the big new furnaces of the steel companies that have put up production in the past six months, as appears from the fact that a net addition of 16 furnaces to the active coke and anthracite list between July 1, 1905, and January 1, 1906, added 58,000 tons to weekly capacity, or 3625 tons per week per furnace. The average weekly capacity of the 286 coke and anthracite furnaces active on January 1, 1906, was only 1630 tons. Considering the fit capacity now available for the production of foundry iron it would seem that that end of the blast furnace industry is not in immediate danger of being overdone.

Cyclical Parallels in the Iron Trade.

Whether one be a believer or not in the cyclical nature of the movements in the American iron trade it will do no harm to read the following verbatim extract from a publication now almost 19 years old. It is taken from the annual statistical report of the American Iron and Steel Association giving the statistics for 1886, the letter of transmission being dated March 31, 1887, and signed by James M. Swank, general manager. After a review of the year 1886 alone the following words occur:

> The history of the American iron trade appears to have always been marked by cycles of alternate prosperity and reaction—the latter akin to or wholly comprehensive of real adversity. A glance at the experience of the last few years will show how rapidly these cycles succeed each other. In 1871, owing partly to the stimulating influences originating in the Franco-German war of the preceding year and partly to a revival of railroad building in our own country, prices of iron and steel steadily but slowly advanced at home and abroad. In 1872 this country was visited by an "iron famine," which rapidly advanced both foreign and domestic prices. A large part of this advance at home was well maintained until the Jay Cooke railroad panic of September 19, 1873, after which prices declined steadily in this country until the latter part of 1878, when a slight rally took place, which was succeeded in 1879 by the phenomenal "boom" of that year. This "boom" lasted until 1880, when it suddenly gave way and prices fell rapidly for several months. In 1881 and 1882 our prices were comparatively steady and fairly remunerative, but in 1883 they again began to fall and they continued to fall through 1883 and 1884 and until the latter part of 1885, when a healthy revival in every branch of our iron and steel industries commenced, which has continued to this day, most prices now being higher than at any period since 1883. Production has, as a rule, followed the course of prices.

It is to the latter part of this extract that particular attention is directed. The panic of 1893 was a bank panic in June, while the panic of 1873 was a railroad panic in September. Prices declined steadily after 1893, the lowest being reached in 1897, while a slight rally took place in 1898, as there was a slight rally in 1878. If the boom of 1879 was justifiably called "phenomenal," certainly that of 1899 merited the same term. The early boom collapsed in 1880 in a manner which Mr. Swank called "sudden." Certainly the term would not be inappropriate for the course in 1900, when wire products were reduced $20 a ton over night and merchant bars fell to below the bare cost of production. In both periods the slump year was followed by two years of improvement, while in 1883 and in 1903 prices began to fall. In the later period the upturn occurred in 1904, with a minor drop and recovery in midsummer of the following year, while in the earlier period the upturn was distinctly deferred until 1885.

Perhaps these coincidences are but accidental. If they are, it is more remarkable than that they should be due to a common cause. Whatever may be the cause, and some plausible ones have been suggested, it is a fact that severe depressions have been striking industry about every 20 years. It is but natural that the recovery should follow a certain course. The depression strikes out every particle of optimism from the minds of men and is thus prolonged. Costs of production, including wages, are reduced steadily, and it is toward the end of the period that the lowest selling prices are found. Industry gets into such a condition that nothing but an irresistible force will rouse it. Once roused the improvement is altogether too rapid, and a veritable boom, like that in 1879 and 1899, results. Then there is the necessary quick reaction, followed by a gradual recovery over a longer period, but there is still too much momentum. The pendulum swings too far and there is a mild reaction, as in 1883-1885 and 1903-1904. The generation in active charge of affairs becomes accustomed to these changes, and men are not filled unduly with either optimism or pessimism. The swing of the pendulum, which at first has been quick and to an extreme point, moderates, covering less ground and taking longer to cover it. Its swings almost die out and a period of relative steadiness ensues, covering several years.

With such close coincidence to date it is not altogether unreasonable to assume that the experience of 20 years ago may have some teaching for the immediate future. At any rate, it can be stated that there was a mild decline in the summer of 1886 and a distinct advance in the closing months of the year, whereby the year 1887 was generally a more prosperous one than 1886 or 1885. The prosperity continued, with comparatively unimportant incidents, until the crash of 1893. If there be a parallel to be drawn between the two 20-year periods we should now expect about seven years of prosperity, unbroken by important movements in either direction, and making up a total more satisfactory than that of any consecutive seven years in the previous part of the 20-year cycles, with their sharp movements in alternate directions.

The Ambulance Chasing Lawyer.

In Massachusetts an interesting bill has been introduced in the Legislature, aimed at the ambulance chaser. Among its provisions are the following:

> Whoever for his own gain, and having no existing relationship or interest in the issue, directly or indirectly, solicits another to sue at law or in equity, or to make a litigious claim, or to retain his own or another's services in suing or making a litigious claim; or whoever, being an attorney-at-law, knowingly presents a case in which his services have been retained as a result of such solicitation; or whoever, being an attorney-at-law, directly or indirectly, agrees to procure another to be employed as an expert witness, or procures another to be so employed in consideration of his so soliciting litigious business, or undertaking to solicit it, or in any other way compensates or agrees to compensate another for so doing, shall be punished by a fine of not more than $500 or by imprisonment for not more than three months, or both.

This proposed enactment may perhaps be too radical to become a law in its present form, but it is interesting as marking a beginning of legislative agitation on a subject of growing menace. The annoyance to employers which is wrought by lawyers who solicit accident claims is a crying evil. Bar associations, with the co-operation of the judiciary, could eradicate it. Judges everywhere

deplore this new fashion of practicing law, but bar associations are proverbially slow to act in matters relating to abuses of their profession. In a large city the victim of an accident, no matter how trivial may be his injuries, is besieged by dozens of lawyers or their "runners," so termed, within a few hours of its happening. The ambulance service is watched by these men with an eagerness even greater than that of the police reporters of the daily press. Specious and alluring promises of large damages are made to induce the injured person or his friends to retain these legal services. Thousands of fictitious claims for damages are grounded on these promises. In smaller towns the only difference in the procedure is that the number of lawyers soliciting such business is smaller. The disposition to work up the damage suits is the same. If Massachusetts should enact the proposed law a long step would be taken toward a much needed reform among legal practitioners.

CORRESPONDENCE.

The Anthracite Coal Operators and Mine Workers.

To the Editor: During the past year the leaders of the Mine Workers' Union have given their views very freely through the press, asserting, among other things, that they were using every exertion to strengthen their membership as well as their finances in anticipation of a strike throughout the anthracite coal fields of Pennsylvania. As the time set, April 1, is fast approaching, the writer makes the very broad statement that neither the public, the manufacturer nor the business man will look on another miners' strike with favor or sympathy for either the miners or the coal operators, as all know by past as well as present experience that the consumer, meaning the public, the manufacturer and the business man, must foot the bill.

No better illustration of this need be given than by pointing to the actual fact that within less than 60 miles from the mines chestnut coal is selling at $6 per ton, or over one-third of a cent a pound. And this is in the face of an extraordinarily mild winter, with no excessive demand or no excessive cost in mining. In fact, actually the reverse is the case, as is in evidence by the Reading Railroad Company posting notices in its Reading shops that it is compelled to go on nine hours a day, affecting over 3000 employees, as the exceedingly mild winter has so materially reduced the wear and tear on the road.

Will not the same condition be found around the mines? Still we are asked to pay these exorbitant prices for coal. Is it simply because the operators can ask it and the public will have to pay it, or is it charging the public with the expense of the last strike? If we take the quantity of anthracite coal mined within the past three years and put $1 a ton on it, which is a fair average of the increased cost of coal, were not all the expenses of the last strike settled long ago?

Let us look on the other side. The miners, according to their leaders, announce that a demand will be made on the operators for recognition of the union, an increase of wages and an eight hour day with ten hours' pay. Now, the recognition of the union is a matter more between the miners and the operators than an affair concerning the public, unless, as is often the case, excessive power makes unions arbitrary as well as corporations. We will assume, however, for the sake of illustrating the matter, that all will be conceded that may be asked for. We presume the increase in wages is asked for, not so much as a necessity as to make the wages of eight hours equal to that received for ten hours' labor; or, in other words, that the mine worker should not be compelled to put his hand in his own pocket to contribute to this two hours' idle time each day, and here is where the public is interested.

Let us form some idea of what this would amount to. During the last strike, three years ago, the labor leaders said that there were 147,000 mine workers on strike. At a very conservative estimate I think it can be safely said that there are now 150,000. Two hours each day for 150,000 men would make 300,000 hours of idle time for one day, 1,800,000 hours for one week, 7,200,000 hours for one month and 86,400,000 hours for 12 months. This multiplied by the very conservative estimate of an average of 20 cents per hour amounts to the snug sum of $17,280,000. This would give from 24 to 28 days in each year for holidays, &c., which the people feel certain they will have to pay, besides a good many imaginary expenses which are always tacked on.

The great ambition of labor leaders to-day is to get an eight hour work day with ten hours' pay. Now, we will assume that it has gone along the whole line. It would make no very great difference to the manufacturer and employer, as within 60 days he would so arrange his prices and discounts as to make the consumer pay for the advance, the same as the coal operator has. But, let us see if the working man should be benefited. As he is the largest consumer of everything that goes to make up the living expenses of the household, either directly or indirectly, he is the one who must pay for the two hours idle time.

As there are usually two sides to almost all questions, let us point out one on the other side. If manufacturers or employers were to post notices on their shop doors that after a stated time they would require ten hours as a day's labor, but would only pay for eight hours, putting it very mildly, would it not make considerable of a commotion among workingmen through the United States? But let me ask, is there any great moral difference in the principles of the demands? Each would be asking for something for which he is not willing to give value received.

I. B.

WILLIAMSPORT, PA., January 23, 1906.

Waterproofing Transmission Rope.

There is a large demand for a first-class waterproofed transmission rope. Of course, the principal use of this rope is on drives exposed to the weather. On such drives, when using single ropes, there is often trouble from the stretching and shrinking of the rope, caused by changes in the weather. Sometimes this trouble is quite serious, the shrinkage of the rope pulling down shafting, or at least causing hot bearings. On account of this stretch and shrinkage outdoor drives are usually made on the American system, using a tension carriage, which takes care of the variation in length. This increases the cost of the drive; and the rope does not last long because it is affected so much by dampness.

Cotton and other mills, to which additions are made, usually have the new buildings at a short distance from the main plant, and drive across the open space by means of ropes. In designing new plants it is advisable, in many cases, to have the shafts project through the walls and drive along the outside of the buildings with ropes. This saves space inside, especially head room, as the shafting can be placed higher and large sheaves can be used for driving. The lighting will also be better. Waterproofed rope makes such an arrangement satisfactory.

There is also quite a demand from cotton gins and cotton oil mills for a transmission rope which will not be affected by the hot, damp summer climate. There is usually a great deal of trouble in these mills when starting up in the fall, as the ropes are left on the drives during the summer and are weakened by the causes mentioned. On rice plantations, it is becoming quite a usual thing to drive the centrifugal pumps by means of ropes, which, of course, are exposed to a great deal of dampness, and are frequently wetted. The same is true of ropes used to transmit power from water wheels. In paper and pulp mills there is also a demand for waterproofed ropes, as belting will not stand extreme humidity of the air.

The American Mfg. Company, 65 Wall street, New York, has been experimenting for a long time to make a waterproofed rope, and the article now being introduced is the result of many experiments, carried out under the supervision of J. B. Upright, superintendent of its Brook-

lyn mills. In testing this rope, it has been hung in the East river for long intervals, to determine its waterproof qualities, and has been run on one of the company's outdoor drives over a year. One of these drives consists of ten 1¾-inch ropes, running almost the full length of the roof of a four-story building, 225 feet long, which is on the water front of the East River. After running for some time, the rope becomes perfectly smooth and highly polished. The waterproofing fills the jaw of the rope, preventing the accumulation of moisture in the crevices, and this waterproofing being elastic remains in place, even while the rope is running around the sheaves.

The waterproofing adds about 2 per cent. to the weight of the rope, which lasts as long as standard transmission rope, for in addition to the waterproofing it is thoroughly lubricated internally with flake graphite. The ropes run on the roof drive show no more wear than ropes in the mills which have run for the same length of time, under the most favorable conditions. On its machines the American Mfg. Company can make coils of transmission rope 10,000 feet long without a splice.

Retirement of W. J. Isaacson.

CINCINNATI, OHIO, January 31, 1906.—W. J. Isaacson, managing director of the Dayton Coal & Iron Company, Cincinnati, after a long career in the iron trade, has decided to take an extended rest from business cares and has resigned. He started in the iron business in 1869 in New Haven, Conn. The business in those days was largely one of importation of iron, steel and metals. The production of pig iron in the United States at that time was under 2,000,000 tons annually and the imports were over 1,000,000 tons. As the business consisted so largely of imports, he became a partner in the firm with which he was connected and made his home in Liverpool, Eng., from 1871 until 1885, at which time he retired from the firm in consequences of the change which came over the trade, the United States showing ambition to produce its own requirements at that time.

The Dayton Coal & Iron Company had just been formed by English and Scotch capital and Mr. Isaacson accepted a position with that company as managing director, which position he has held up to the present time. In connection with the well known firm of James Watson & Co., Glasgow, he started the business of exporting pig iron to Europe in 1890. In his 36 years of active service Mr. Isaacson has seen the production of pig iron in the United States grow enormously. To the representative of *The Iron Age* Mr. Isaacson said:

"If I were to venture a forecast of the future I would say that this country is destined to become an immense exporter of iron and steel. The world's requirements are constantly expanding and must depend on this country for supplies as England has practically reached the limit of its possibilities and Germany can only increase moderately. The exportation of iron and steel products from this country is only beginning and must grow constantly as the expansion here is almost unlimited. The availability of raw material is the factor in prices, which will and does give us the position of advantage we occupy to-day. With the world's requirements constantly increasing and ours the chief available supply, there will be an increasing demand for pig iron to supply foreign requirements."

S. H. Whitaker, who has been assistant to the managing director, will be in charge of the Cincinnati office, succeeding Mr. Isaacson.

The Marietta *Register*, Marietta, Ohio, has started a movement for the purpose of awakening local interest in the industrial growth of that city. It has made a proposition to the Marietta Board of Trade and the Merchants' Association to be one of 100 corporations, firms, partnerships or individuals to pay the 100th part of a fund of $100,000 to be used to further the growth of Marietta, the subscription not be used as a bonus in the usual sense. If the proposition is thought to be too large for the present, the paper agrees to be one of 100 subscribers of $500 each in a fund of $50,000, which may be sufficient for present needs and to try the experiment. It makes this offer in the hope that it will be the commencement of a movement which will result in the permanent and substantial growth of the city.

PERSONAL.

T. J. Bray, for the past five years chief engineer of the United Engineering & Foundry Company, Pittsburgh, has been appointed assistant to President John A. Topping of the Republic Iron & Steel Company. Mr. Bray will make his headquarters in the Frick Annex Building, Pittsburgh. The heads of the departments, including Isaac W. Frank, president of the United Engineering & Foundry Company, superintendents of the various plants, chief clerks and members of the sales, engineering and auditing departments, to the number of about 30, tendered an informal farewell dinner to Mr. Bray on Tuesday evening, January 23. F. J. Ellis has been appointed chief engineer of the United Engineering & Foundry Company, to succeed Mr. Bray.

Jeremiah Dwyer, president of the Michigan Stove Company, Detroit, who sails February 5 for a trip to the Orient, including Australia, was given a farewell banquet at the Detroit Club January 24 by the Peninsular Stove Company. The guests, 19 in number, were the officers of the Michigan Stove Company, Detroit Stove Works and the Art Stove Company.

The Oswego Boiler & Engine Company, Oswego, N. Y., announces that L. L. Bentley, Bethlehem, Pa., has been appointed vice-president and general manager of the company and will be the active head at Oswego, N. Y. Mr. Bentley is a graduate of Cornell University in mechanical engineering, has had a wide experience in the design and construction of boilers and plate work, and has been mechanical engineer of the Lehigh Valley Railroad for some years.

T. W. Guthrie, who for some months has been secretary of the Executive Committee of the Republic Iron & Steel Company, has been made assistant to President John A. Topping, with jurisdiction over mines, coking plants and transportation of ore.

Benjamin Talbot, Middlesbrough, Eng., is expected to arrive in the United States in February and will visit Central Western and Southern steel making districts.

McGrew & Bruning, consulting and construction engineers, Brunson Block, Columbus, Ohio, have been succeeded by the National Engineering Company, a corporation, of which J. A. McGrew is president, H. D. Bruning vice-president and manager, and F. C. Caldwell secretary and treasurer. Following are the various departments and their heads: Architectural department, J. N. Bradford, chief architect; mechanical department, E. A. Hitchcock, chief engineer; electrical department, F. C. Caldwell, chief engineer; railroad and municipal department, C. E. Sherman, chief engineer; bridge and structural department, A. H. Heller, construction engineer; mining department, Frank Haas, chief engineer and fuel expert.

A reception is to be tendered February 2 by the New York Section of the American Electrochemical Society to the famous German scientist, Professor Wilhelm Ostwald. Included among the speakers are Professor Bancroft, president of the society, Professor Chandler, Professor Loeb, Dr. Schieffelin and Professor Wiley.

C. P. Wheeler, of Pickands, Brown & Co., Chicago, sailed for Europe recently and will spend three months in France and Switzerland.

A. J. Caldwell has resigned the commissionership of the National Founders' Association. His successor has not yet been selected.

The names of the late Edward Y. Townsend and the late Daniel J. Morrell, who were respectively president and general superintendent of the Cambria Iron Company, will be borne by the two 600-ton steamers now building for the Cambria Steel Company at Lake shipyards.

Charles Hart, general manager of the Republic Iron & Steel Company, has announced the appointment of J. W. Deetrick, general superintendent of the Valley works

at Youngstown, O., and of the blast furnaces in the Mahoning and Shenango valleys, to be district manager. He will hereafter have charge of the Bessemer and Brown-Bonnell works at Youngstown, in addition to the plants previously under his supervision. Peter J. Gordon, who has been superintendent of the Bessemer works, becomes superintendent of the Brown-Bonnell works also. Harry Parrock, who has been superintendent of the Brown-Bonnell works, becomes assistant superintendent of the two plants. These changes are in anticipation of the removal of the headquarters of General Manager Hart from Youngstown to Pittsburgh on March 1.

Geo. W. Sherling has been appointed general superintendent of coal mines with the Republic Iron & Steel Company in the Alabama district. Mr. Sherling was for a number of years with the Sloss-Sheffield Steel & Iron Company at Coalburg.

At the meeting of the Board of Directors of the United States Steel Corporation, held January 30, Marvin Hughitt was chosen to the directorate to fill the vacancy caused by the death of Marshall Field. Mr. Hughitt is the president of the Chicago & Northwestern Railway Company.

W. L. Brown, president Pickands, Brown & Co., Chicago, and chairman of the American, Shipbuilding Company, left Chicago this week on a three months' trip to California.

Frank Nullmeyer, formerly assistant superintendent of the Donora Works of American Steel & Wire Company, has been transferred to the Braddock Works to succeed J. G. Mustin, now superintendent of the Allentown Works. W. H. Farrell continues as superintendent of the Donora Works, a position that he has very acceptably filled for a long time. The statement made last week that the position of superintendent of the Donora Works was vacant was incorrect.

Arthur Falkenau, Philadelphia, announces that having retired from the active manufacturing business in which he has been engaged during the past 25 years, he has opened an office as consulting engineer and expert.

H. E. Anderson, formerly assistant treasurer of the Westinghouse Machine Company, Pittsburgh, has resigned and has become identified with Henry Sproul & Co., stock brokers, Pittsburgh.

Officials of the American Sheet & Tin Plate Company, including President C. W. Bray and Vice-President E. W. Pargny, are making an official inspection of the company's various plants in the Shenango Valley and Wheeling districts. On Tuesday the party was in New Castle and on Wednesday was at Sharon and South Sharon.

OBITUARY.

CAL HIRSCH, president of the Cal Hirsch & Sons Iron & Rail Company, died at his home in St. Louis January 10, aged 73 years. He had been engaged in the iron and railroad supply business in St. Louis for more than 35 years and was well and favorably known throughout the United States. He is survived by a widow and ten children, comprising eight sons and two daughters. Four of the sons are now in charge of the company, which has a branch office in Chicago, with I. C. Hirsch in Cincinnati and L. K. Hirsch in New York City.

JOHN DONALDSON, one of the founders and the president of the Donaldson Iron Company, Emaus, Pa., died January 21 in Atlantic City after an illness from heart troubles which seriously affected him since last spring. Hopeful of recovery, he removed to Atlantic City from his home in Philadelphia, but unavailingly. He was born in Tamaqua, Pa., and had lived to be 71 years old. For years he was heavily interested in the anthracite coal business in Schuylkill County. In 1883, with George Ormrod and others, he organized the Donaldson Iron Company, of which he remained the president up to the day of his death. He is survived by his widow and two children. A son, William J., is general sales agent for the Alma Cement Mfg. Company, Wellston, Ohio.

Bethlehem Bonds.

Harvey Fisk & Co. Sons, New York, are offering $5,000,000 of the First Extension Mortgage Gold Bonds of the Bethlehem Steel Company bearing 5 per cent. interest, at 96½. The authorized issue is $12,000,000 and they are redeemable at 105 and interest on any interest day. Charles M. Schwab, the president, in a letter to Harvey Fisk & Sons, made the following statement:

The bonded indebtedness consists of $1,351,000 5 per cent. bonds of the Bethlehem Iron Company, maturing February 1, 1907, and secured by a mortgage on the property of the Bethlehem Iron Company. The mortgage securing this issue of bonds provided no sinking fund for the extinguishment thereof, but the Bethlehem Steel Company has voluntarily established for this issue a sinking fund of $37,000 per month, which now aggregates $874,386.04. This issue of bonds will be paid at maturity from the sinking fund thus established. $7,500,000 purchase-money mortgage 6 per cent. gold bonds of the Bethlehem Steel Company (issued in exchange for the capital stock of the Bethlehem Iron Company) maturing August 1, 1998, secured by a mortgage on the real estate of the company owned at the time of the creation of the mortgage, and the plant and buildings erected thereon. Of this issue the Bethlehem Steel Company has purchased and now holds $92,000. This mortgage does not cover subsequently acquired real estate or the plants and buildings erected or to be erected thereon.

The net earnings of this company since its organization, after deducting bond interest and inventory adjustments, are as follows:

Fiscal Years Ending April 30.

1900	$1,842,123.99
1901	501,661.91
1902	978,743.81
1903	1,859,137.81
1904	2,842,107.87
1905	3,100,853.02
Seven months ending November 30, 1905	1,504,269.94
Total	$12,628,898.35

During the period from May 1, 1899, to January 1, 1905, the beginning of the present fiscal year, there has been deducted from the net earnings as shown above, and from surplus, for depreciation and other adjustments, a total of $2,044,448.62. (Due to the change in the company's fiscal year to correspond with the calendar year, the depreciation for the current year will not be adjusted until December 31, 1905.) The surplus on November 30, 1905, amounts to $10,935,043.43.

The Bethlehem Steel Company has been for a number of years engaged in the manufacture of armor plate, gun forgings, gun carriages, finished guns of the larger calibers, pig iron, high grade steel billets, muck bar, and steel forgings of all descriptions. During the last few years the company has been increasing its plant, and now manufactures in addition to the above, steel and iron castings, a high grade of refined and bar iron including stay bolt iron, brass castings of all descriptions, guns of smaller caliber with all their accessories, projectiles, drop forgings, crucible steel, heavy special machinery, and other commercial products.

It is now proposed to further increase the capacity of the present plant, in so far as the above products are concerned, and in addition thereto, erect a new plant for the manufacture of beams, channels, structural shapes both of the design now in use and of special designs, rails and billets.

The Bethlehem Steel Company has for a number of years made a special study of and has produced steels of high grade, such as nickel steel, chrome steel, and the other alloys of steel.

The school of apprentices and journeymen of the Carnegie Technical Schools, Pittsburgh, has opened with an enrollment of 200 pupils. This places the enrollment of the institution at 704 within three months after its opening. The domestic science department will be opened within a short time with a large list of accepted applicants, giving the school nearly 1000 pupils during its first year.

NEWS OF THE WORKS.

Iron and Steel.

The Midland Steel Company, Pittsburgh, now building a blast furnace at Industry, Pa., has made a traffic arrangement with the Pittsburgh & Lake Erie Railroad. The blast furnace is nearing completion and the company is soliciting orders for pig iron for delivery in second and third quarters of this year.

The puddling departments at the Lower Union mills of the Carnegie Steel Company, at Youngstown, Ohio, are being dismantled. No. 1 mill has been practically wrecked and No. 2 mill will shortly be torn down and in its place a 12-inch continuous mill will be built.

Sligo Iron & Steel Company, Pittsburgh, works at Connellsville, Pa., has elected Charles Davidson president; Colonel J. M. Reid, vice-president; Joseph McConnell, secretary, and George Summers, superintendent.

The Interstate Engineering Company is preparing plans for the erection of an addition to the plant of the Empire Rolling Mill Company, Bessemer avenue, Cleveland, Ohio. The building will be 48 x 85 feet and 39 feet high, of steel and fire proof construction.

The new furnace of the Alabama Consolidated Coal & Iron Company, at Gadsden, Ala., is nearing completion and it is believed that within 60 days the end of the construction work will be at hand and the drying out of the furnace started. This iron maker will have a daily capacity of 300 tons.

The bloom forging department of the Pennsylvania Swedish Iron Company, at Cheswick, Pa., has started up and the remainder of the plant will begin operations about March 15. The officers are E. W. Wright, president; A. M. Bell, secretary and treasurer, and Ambrose Beard, formerly with the Dover Forge & Iron Company, vice-president and general manager. This plant has been under construction only about three months.

Repairs on Furnace No. 2 of the Roane Iron Company, at Rockwood, Tenn., have been completed and the furnace is in first-class condition for a successful run.

The Crescent rolling mills, which the Virginia Iron, Coal & Coke Company is bringing to Bristol, Tenn., from Max Meadows, Va., will be completed ready to start by April 1. The plant will employ 300 skilled laborers.

The Tennessee Coal, Iron & Railroad Company will blow in the Alice Furnace in Birmingham, Ala., at once.

At a meeting of the stockholders of the Chattanooga Coal & Iron Company just held at Chattanooga, Tenn., the following officers were elected: President, C. E. Buek, Birmingham, Ala.; vice-president, Wm. Yule, St. Louis, Mo.; secretary, F. V. Berry, Chattanooga; directors, M. G. Wynnkoop, New York; J. D. Lacey, Chicago; A. W. Chambliss, Chattanooga; C. E. Buek and F. V. Berry. The company has been chartered with $500,000 capital stock to operate the new Chattanooga Furnace, which is located on the west side of Cameron Hill.

William B. Scaife & Co., Pittsburgh, have been awarded a contract for the steel buildings for the new plant of the Firth-Sterling Steel Company, to be erected at Glesboro, near Washington, D. C. Several extensive buildings will be put up, involving a large tonnage of structural steel.

General Machinery.

The Connellsville Machine & Car Company is building its new plant at Connellsville, Pa. The Van Dorn Iron Works Company, Cleveland, has the contract for the steel building, and the plant is expected to be ready for operation shortly after April 1.

The Westinghouse Electric & Mfg. Company has booked orders for 47 electrical mine locomotives, of which 11 were ordered by the Oliver Iron Mining Company, 6 by the Newport Mining Company, 5 for the British Columbia Copper Company and others by the Bishoff Tin Mining Company, Melbourne, Australia.

The International Ideauha Machine Company has been incorporated in New York to control the foreign patents of the corporation of that name, which is putting on the market a new coal mining dredge. The company has offices at 17 Battery place, and the incorporators are B. G. Jayne, C. M. Knight and James L. Clark. The company is contracting its work at present but later on may erect a plant.

The Robins Conveying Belt Company, New York, has recently secured an order through its Boston office for a bucket elevator for the Bon Ami Company, Manchester, Conn. Among other orders now being filled by the Robins company is one for a system of 14-inch belt conveyors and bucket elevator for the Pennsylvania Sand & Glass Company's plant at Granville, Pa., and the Scofield Company, Philadelphia, for 30 and 18 inch conveyors for the Nashvile Light, Heat & Power Company.

The Williams Foundry & Machine Company, Akron, Ohio, is making improvements to its plant and has installed a 42-inch by 20-foot and a 42-inch by 14-foot Schumacher & Boye compound rest instantaneous change gear engine lathes and one No. 12 Higley metal saw.

The Dary Ring Traveler Company, Taunton, Mass., is to erect a new shop building, 30 x 60 feet and two stories. The building will require additional machine tools. Electric power will be employed. The company manufactures spinning and twisting travelers, and a department of automobile repair will be added in the new building.

Notices have been posted at the machine shops of the Baltimore & Ohio Railroad, Connellsville, Pa., stating that the shops will be closed down until February 1 and that after that date they will operate upon an eight hours a day basis.

The Southern Pacific Railroad, San Francisco, Cal., intends to erect new shops at Oakland, Cal., to replace the old ones now in use at that point. The shop facilities will be very much enlarged, but there will probably be but very few new tools purchased, as the tools will be moved from the present shops.

The new machine shops of the Erie Railroad at Avon, N. Y., are being rapidly pushed to completion and it is expected will be finished next week, with the exception of the putting in of the foundations for the heavy machinery which is to be installed and the laying of the floors.

The Wabash Railroad has placed an order with the Baldwin Locomotive Works for 60 locomotives. The engines are to be of the Prairie type and will be delivered during this year. They will be used to replace old locomotives destroyed or discarded.

Power Plant Equipment.

The Westinghouse Machine Company has just installed a new 3040 horse-power boiler plant in its East Pittsburgh works, together with a complete coal and ash handling equipment and a water filtration plant. The equipment consists of four batteries of two boilers each, whose individual capacities are 380 horse-power. The boilers will be fired by mechanical stokers, which receive coal through chutes directly from the bunkers above. The coal handling system receives coal from hopper cars, crushing it, lifts it to the level of the bunkers, conveys the fuel into the boiler room and delivers it to the storage bins. Ash is similarly handled. The system has a capacity of 40 tons an hour, with a storage capacity of 1000 tons. On account of the impurity of the water available for use at the plant a complete water treating plant has been installed, comprising pumps, filter and treating and settling tanks. The draft for the boiler plant is provided by a new chimney 210 feet high and 9 feet internal diameter. It is of self supporting steel construction.

The North Milwaukee Light & Power Company has been organized at North Milwaukee, Wis., with a capital stock of $50,000, and Dr. J. Thiemann, J. J. Schissler and P. V. Schissler, incorporators.

The Abbott Alkaloidal Company, Chicago, has added a power house to its plant, equipping it with an Erie 125 horse-power water tube boiler, Hawley furnace, Chuse 125 horse-power engine and a Jenney 75-kw. generator.

The Bangor Electric Light Company, Bangor, Maine, is to replace its present power equipment with new apparatus, which will be furnished by the General Electric Company. It will mean no increase in power.

The largest order said to have ever been placed for oil engines has recently been awarded to the De La Vergne Machine Company, New York, by Burnham, Williams & Co., Baldwin Locomotive Works, Philadelphia, Pa. This is for engines aggregating over 3300 actual horse-power. Some of these are to be installed in Philadelphia and the remainder at their steel works at Burnham, Pa. The installation will consist of 125 and 250 horse-power Hornsby-Akroyd oil engines, and they are to be used for direct connection to electric generators and to air compressors, while others will be used for operating machine tools by belt. It is stated that with crude or fuel oil at 2 cents a gallon the cost of operation of the Hornsby-Akroyd engine is ¼ cent per actual horse-power per hour. The De La Vergne Machine Company claims to hold the enviable record of having sold the largest gas engine power plant, the largest ice plant and the largest oil engine power plant in the world.

John S. Maxwell, referee in bankruptcy, has appointed as appraisers of the assets of the National Electric Company, Milwaukee, Wis., J. R. Petley, W. L. Marcy and George H. Fischer. The assets are given in the schedule at $1,300,000.

The James H. Watson Company, Crawfordsville, Ind., intends erecting a plant for the manufacture of galvanized iron products, such as eave trough, conductor pipe, &c., and intends installing its own power and light plant. The company will not need any new machinery in the metal line, as it already has a very complete and up to date equipment. It will, however, need boilers, engines, dynamos and electrical supplies.

Foundries.

The Hart Grain Weigher Company, Peoria, Ill., will double the floor space of its present foundry, which is 60 x 132 feet. The addition will largely be used for outside work.

The Gilleland Car & Foundry Company, St. Louis, Mo., with a capital stock of $5,000,000, has filed its charter in Oklahoma, with the following directors: Edgar B. Gilleland and E. M. Markel of St. Louis; E. M. Markel, Jr., of Des Moines, Iowa; J. S. Fogarty and E. M. Markel of Arkansas City, Kan.; Geo. H. Willis and J. Giles Smith of Wichita, Kan.; F. B. Gilleland of Crescent, A. J. Biddison of Pawnee and Wm. A. Knowles of Guthrie.

The S. Obermayer Company has recently purchased the foundry supply factory of H. S. Vrooman, Chicago. The entire fac-

tory as well as the stock of merchandise has been moved to the Chicago plant of the S. Obermayer Company, which will fill all orders of this department.

The Price & Evans Foundry Company, Chattanooga, Tenn., has had plans prepared for the erection of a large new foundry in the James addition to the city, into which the machinery of the old plant will be moved. The Boyce street plant is, however, being temporarily improved. The firm is one of the largest makers of castings in the South.

Guy Johnson, managing director of the Red River Furnace Company, Clarksville, Tenn., announces the organization of a company formed for the purpose of engaging in the foundry and machine business. Mr. Johnson states that this will be consolidated with another Clarksville enterprise. The company will be capitalized at $100,000 and will be ready for business in 60 days.

At Nashville, Tenn., the Nashville Machine Company has increased its capital stock from $50,000 to $100,000 and will erect a large foundry on the belt line of the Southern & Illinois Central Railroad. The foundry will cost about $50,000 and will turn out machine castings. The stockholders include John N. Sperry, John C. Doyle, Henry Sperry, H. D. Sperry and J. Doyle.

The capacity of the Coosa Pipe & Foundry Company at Gadsden, Ala., will at once be enlarged. There are now 10 floors in operation and by the middle of the year the plant will be enlarged to 20. The present capacity of the plant is 20 tons of finished product daily. This output will be doubled by June 1.

The Besser Mfg. Company, Alpena, Mich., manufacturer of concrete machinery, has purchased the foundry formerly owned by C. B. Warren and will operate it in connection with the present plant. The company recently erected a new boiler house.

Work on the new foundry building of the American Locomotive Company at Dunkirk, N. Y., is approaching completion and the foundry will be in operation by April next. The capacity of the new foundry will be 240 tons per day and it will be equipped with heavy cranes and all the latest devices for the handling of gray iron castings.

The Zanesvile Malleable Casting Company, of which Frank Moore is treasurer, has purchased the plant of the Zanesville Malleable Iron Company, at Zanesville, Ohio, and will make large additions to it.

Bridges and Buildings.

The Belknap Hardware & Mfg. Company, Louisville, Ky., has almost completed its new office and power building, 125 x 190 feet, six stories and basement, of reinforced skeleton concrete construction, and has plans and specifications about ready for another warehouse to be constructed during the coming season, on which it will take bids in detail. This warehouse is to be 175 x 195 feet, either skeleton concrete or steel construction, with brick curtain walls, either seven, eight or nine stories, the floor loads running: First and second floors, 400 pounds; third floor, 350 pounds; upper floors, 300 pounds; roof, 40 pounds per square foot. The company would be pleased to have contractors who wish to figure on this work send in their names and addresses, so that they may be notified when the plans and specifications are ready.

Weston Donaldson, Arcade Building, Philadelphia, Pa., has just purchased all the scrap iron, estimated at about 200 tons, from the plant of the Broadalbrin Knitting Company, Broadalbrin, N. Y., which was recently destroyed by fire.

Fires.

The nail mill of the Southern Steel Company at Ensley, Ala., was destroyed by fire January 28, with a loss of about $75,000. This plant was operated by the Alabama Steel & Wire Company before that company was merged into the Southern Steel Company.

Seven buildings, including machine shop and carpenter shop, connected with the United States Training Station at Newport, R. I., were destroyed by fire January 28. The loss is said to be $100,000.

The Rumsey Gas Engine Works, at Ripley, Pa., was damaged about $20,000 by fire last week.

The large tannery of the United States Leather Company at Petersburg, W. Va., was destroyed by fire last week. The loss is said to be $100,000.

The Union Drop Forge Works, Chicago, Ill., was damaged $75 000 by fire January 23.

The Bellefontaine Bridge & Iron Works, Bellefontaine, Ohio, was partly destroyed by fire January 30. The loss is placed at $30,000.

Hardware.

The Standard Wire Fence Company of Woodstock, Limited, Woodstock, Ontario, reports satisfactory progress at its factory, already having one loom manufacturing fence, while two others are under construction. The company manufactures a fence identical to that made by the Adrian Wire Fence Company, Adrian, Mich., under the American patent. There is reported a good demand for this kind of fence in Ontario, and the company has under way plans for a new factory.

Patten & Stafford Company, Canastota, N. Y., manufacturer of New York Champion rakes, harrows, &c., is reorganizing its foundry with the idea of extending its business. Besides making all the cast iron for implements turned out by the company, the foundry has a good custom trade which it proposes to increase by competition with other firms, thus necessitating an enlarged plant and force of molders.

The Morley Twine & Machinery Company, Sioux City, Iowa, is taking steps toward the erection of a new binder twine plant having a capacity of 5 tons per day. The plant may be completed in time to produce some twine for the 1906 harvest. The company recently placed an order for 100 spinning machines with Hoover & Gamble, Miamisburg, Ohio.

The Federal Tool & Supply Company, Federal, Ill., has been incorporated with a capital stock of $10,000 to manufacture a general line of handles of all descriptions and wood turnings to order, as well as a general line of wooden ware. The incorporators are Charles F. and Dorothy D. Herb and Ethel A. and Chas. L. Beall.

The Foyer Mfg. Company, manufacturer of novelties, baby cabs and carriages, go-carts and postal scales, will remove from Chicago, Ill., to Sturgis, Mich. A factory is being erected at the latter place which will be 80 x 420 feet. Employment will be given to 150 men.

The business of the Western Wire Goods Company, 146-150 Clinton street, Buffalo, N. Y., has passed into new hands, the present officers being as follows: Conrad E. Wettlaufer, president; George C. Finley, vice-president and secretary; Alfred K. Finley, treasurer. The company's products comprise kitchen wire goods, garment hangers, carpet whips, &c.

The Rock River Mfg. Company, Dixon, Ill., has purchased the patents and good will of the Cosey barb wire reel and has increased its paid up capital to $40,000. In addition to its other hardware specialties, including a turret hook and tack hammer, the company will in the future manufacture the products of the Cosey Barb Wire Reel Company, consisting of a barb wire reel and self cleaning hoe, the inventions of H. M. Cosey. The officers of the company are: E. L. Kling, president; C. G. Smith, vice-president; F. N. Fargo, secretary, and F. X. Newcomer, treasurer. These officers, with the exception of C. G. Smith, vice-president, and H. M. Cosey and G. M. Weed, constitute the Board of Directors.

Bonney Vise & Tool Works, Philadelphia, Pa., reports that its capacity on its combination pipe and monkey wrench and pipe cutter is proving inadequate to meet the demand and a factory in New York State is being run almost entirely on these wrenches under special contract. Most jobbers are now said to be stocking the goods and large sales are indicated by their repeat orders. Exceptional export orders are also reported.

Erie Stamping & Mfg. Company, Erie, Pa., metal stamper, brass founder, electroplater and manufacturer of oil cups, grease cups, oil reservoirs, nut covers, &c., has purchased the E. S. Noyes Brass Foundry. This adds to the company's plant a large and modern factory building, adjoining its own property, and affording increased facilities and capacity, which have been needed for some time.

The Mann Edge Tool Company, whose principal plant at Lewistown, Pa., is maintained in first-class condition, with ample water power and every facility for economic and correct production, reports that its Robert Mann plant at Mill Hall is undergoing extensive improvements, begun several months since, and will be ready for operation about April 1. The improvements consist of the consolidation of two water powers, which will more than double the water power capacity at one point, and the remodeling and re-equipment of the entire plant as well as its extension. The two plants will provide the company with every facility for the production of axes, the output of which will be about 70,000 dozen per annum. The company has discontinued its selling arrangement with Henry Keidel & Co., Baltimore, Md., and all business will be transacted through direct representatives on a salary basis.

National Cutlery Company, Detroit, Mich., is erecting a new plant which will be modern in every respect. It will consist of four separate buildings, with the most approved equipment for the manufacture of axes, hatchets, butcher knives, scythes and razors. This new plant has been necessitated by the large increase in the business of the company. Its completion will enable the company to greatly enlarge its output.

The Capewell Horse Nail Company, Hartford, Conn., will erect a one-story brick addition, 25 x 123 feet.

The Taunton Wire Nail Company, Taunton, Mass., has leased the plant known as the Atlas Tack property in that city and will occupy it immediately. The lease is for one year with an option of purchase. With the additional floor space the company will be able to double its capacity. Wire nails, tacks and escutcheon pins are manufactured.

Miscellaneous.

The Lincoln Coal & Coke Company, Scottdale, Pa., held its annual meeting last week. A. L. Keister was elected president; A. C. Overholt, vice-president; E. L. Stoner, secretary; B. F. Keister, treasurer. Eighty-one new ovens were built during the year, giving the company a 400-oven plant.

The Sheffield Steel Range & Stove Company has been organized at Sheffield, Ala., with a capital stock of $50,000, of which $15,000 has been paid in. The company will manufacture steel

and cast ranges, cook stoves, heaters, grates, mantels, hollow ware, &c. The officers are: John Donk, Jr., president; S. B. McTyer, treasurer, and R. R. Hill, secretary and manager.

The plant of the North Birmingham Frog & Switch Company, at Birmingham, Ala., will be ready for operation probably by March 1. There has been some delay in the construction work.

Announcement is made of the formation of the Electric Cable Company, Bridgeport, Conn., which succeeds the Magnet Wire Company and the Peerless Electric Company, both of New York. The company is erecting a large model factory in Bridgeport, where it will manufacture magnet wire, field and armature coils and voltax, the new nonrubber insulation which is now on the market for the first time. The New York office will be at 42 Broadway. The officers and directors are: President, Edwin W. Moore; vice-president, Frederick H. Cowles; treasurer, J. Nelson Shreve; secretary, H. S. Williston; Alfred Skitt and John Carstensen of New York, G. Tracy Rogers of Binghamton, N. Y.; George C. Edwards of Bridgeport, Conn., and Russel A. Cowles of New York.

H. M. Shimer & Co., smelters and refiners, Philadelphia, Pa., will erect a 60 x 80 foot addition of brick and iron construction to their plant at Nineteenth street and Washington avenue. This improvement will enable them to produce yearly 6,500,000 pounds of their Golden Rod spelter, as well as double the capacity for the production of other metals.

The Iowa Iron Works, Centerville, Iowa, is making arrangements to move to Fort Smith, Ark. The firm manufactures self oiling mine cars, the invention of William Kirchman, president of the company.

The Star Pin Company, Shelton, Conn., has acquired the so-called pulp mill property in that place. The three-story brick factory building on the premises will be remodeled for use in connection with the company's main plant, which will increase the floor space about 50 per cent. The company is not yet ready to state what its machinery requirements will be.

The Bessemer & Lake Erie Coal Mine Company, Rochester, N. Y., has taken over the property of the Bessemer Coal Mining Company, Reynoldsville, Pa., which is located at Ferris, and is installing improved machinery and after February 1 will produce about 1000 tons a day. The Hallston Coal & Coke Company, Zelienople, Pa., is now producing about five carloads per day and is improving its property with a view of producing a much larger tonnage in a short time. The Pickands-Magee Coal & Coke Company, Pittsburgh, Pa., is the exclusive sales agent for the production of both of these companies.

The Acker Process Company, Niagara Falls, N. Y., is enlarging one of its producing plants 300 per cent. and has placed orders with the East Buffalo Iron Works, Buffalo, N. Y., for about $20,000 worth of new machinery to be used in this plant. The delivery is to be in 30, 60 and 90 days. The company secures its power from the Niagara Falls Hydraulic Power & Mfg. Company.

The Kalamazoo Railway Supply Company, Kalamazoo, Mich., has been reorganized during the past year with largely increased capital and has added a number of important tools to its machine shop equipment.

The Eagle Cornice & Skylight Works, 192 Charles street, Boston, is erecting a new shop at Cambridge, Mass., to be one story and 32 x 65 feet.

The Winslow Bros. & Smith Company, Norwood, Mass., manufacturer of leather, is planning to erect a six-story building of solid concrete and expanded metal. The company is now looking for the best methods of getting concrete to the point of construction and would like to receive information on the subject.

The Bridgeport Deoxidized Bronze & Metal Company, Bridgeport, Conn., is to replace its plant immediately, which was recently burned. Practically all contracts have been closed.

The Gall-Webb Mfg. Company, 6 to 8 Locke street, Buffalo, N. Y., recently incorporated, will place on the market a new electric light holder, which allows the light to be swung in a complete circle or turned to any angle. Harry McGall, mechanical engineer, is at the head of the enterprise.

The American Steel Dredge Works, Logansport, Ind., which was organized by James P. Karr and John B. Rauch, now has its new plant in operation.

The Sayre Mining & Mfg. Company, Birmingham, Ala., which operates coal mines and 100 coke ovens at Sayre, Jefferson County, Ala., is preparing to further develop its mines and to build probably 400 additional coke ovens. The company expects to build a blast furnace later on. Robert Sayre of Bethlehem, Pa., is president, and Samuel Thomas of Catasauqua, W. A. Lathrop of the Pennsylvania Coke Company and A. N. Cleaver are stockholders in the company. John H. Adams, assistant manager of the Republic Iron & Steel Company, will devote much of his time to the Sayre Company.

The Telegraph Signal Company, 410 Wilder Building, Rochester, N. Y., recently incorporated, has rented and equipped a plant which it will place in operation about February for manufacturing its patent signal device and a full line of telegraph instruments, switchboards, &c. James G. Halleran is president; John McGarvey, vice-president, and S. R. Wright, secretary and treasurer.

The Weidlich Bros. Mfg. Company, Bridgeport, Conn., manufacturer of gold and silver plated ware, has been incorporated in Connecticut with a capital stock of $10,000, the incorporators being Daniel H. Ferris, Charles E. Weidlich, Louis Weidlich and Arthur C. Herbst, all of Bridgeport. The business has been conducted as a partnership. The company expects to considerably expand its business during the year.

The American Hatters & Furriers Corporation, Danbury, Conn., which suffered a fire loss of $25,000 recently, states that it expects to rebuild in the spring. The power plant was badly damaged.

The Russell Electric Company, Danbury, Conn., manufacturer of telephones, telephone supplies and electrical novelties, which has just completed a new factory, has been incorporated in Connecticut with a capital stock of $20,000. The incorporators are William Edwin Russell and William Earle Russell, Danbury, and Charles B. Russell, Worcester, Mass. William Edwin Russell, the president and treasurer of the company, was formerly the president and general manager of the Russell-Tomlinson Electric Company, Danbury.

Stockholders of the American Nut & Bolt Fastener Company, Pittsburgh, have elected the following directors: S. E. Brown, Milton Bartley, Robert Pitcairn, Jr., Frederick Bowery, S. E. Moore, J. N. Davidson, Barton Grubbs, David Winters and Harvey Bartley. The company had a prosperous year in 1905, having paid during the year 18 per cent. dividends.

Joint Conferences on Soft Coal Miners' Wage Scale.

INDIANAPOLIS, IND., January 29, 1906.—The scale committees of two conferences are in separate sessions considering the miners' demands. The original draft of the demands of the miners of the Central competitive field—Ohio, Indiana, Illinois and western Pennsylvania—was amended before going to the Scale Committee to include making the "check off" a part of the contract that may be signed. The check off is the system by which the operators collect for the United Mine Workers the dues, assessments and fines from their members, deducting them from wages. The demands as they went to the Joint Committee were minus the first, which was to admit the Southwestern States to the joint conference. The operators voted solidly against this and it takes a unit vote in the joint conference to adopt.

The Southwestern conference forthwith organized in separate meeting in Indianapolis, holding its first session Saturday. The demands of the miners of this conference were presented on Monday. They were practically the same as presented to the Central States conference. The effort will be to have the work of the two scale committees and conferences advance concurrently along the same lines and have similar contracts signed about the same time, if agreement can be reached. The indications are that this will hinge almost altogether on the wage question. It seems to be the general belief that the discussion will simmer down to whether the miners shall recover the 5.55 per cent. in wages taken off at the conference two years ago, or whether the present scale shall continue. The operators in both conferences made the proposition to the miners that if it can be shown that they are getting higher prices for coal than those of two years ago they shall give an increase in wages; if it is found on an examination of coal companies' books that coal is selling for lower prices the miners shall accept a reduction from the present scale. The operators made no formal counter demands, as has been the custom previously. Miners base their claims for higher wages mainly on the prosperity of the iron and steel industry, which they say must extend to the coal trade. They claim also that there never was a better demand for coal than now and that long time contracts have been made by the coal companies with the large steel corporations. In the Central States conference there are 633 delegate miners and 357 operators, in the Southwestern conference, 170 miners and 25 operators.

The United Mine Workers amended their constitution by adding the following: "Any international, district or subdistrict officer accepting a salaried political office, other than that of a State legislator, member of Congress, member of local school board, city, borough or town council, or poor boards, shall resign his office with the United Mine Workers immediately upon his acceptance of the same."

The Iron and Metal Trades

Consumption is proceeding at an enormous rate and it is believed that the majority of producers of Finished Iron and Steel are very much in the position of the United States Steel Corporation with its orders of 7,600,000 tons. Makers in nearly all branches of the finished trades are prorating shipments. It is understood that as yet Wire makers have been quite unable to accumulate the stocks with which they generally endeavor to enter the spring season and that the stocks of Tube, Tin Plate and Sheet makers are at a low ebb.

Favored by open weather, production is proceeding at an enormous rate. Some mills have been running right along to catch up, but we are advised that Sunday productive work is to be stopped.

Throughout the Central West Steel is scarce and the finishing mills are not getting their quota. In the Chicago district some relief is coming from the starting of the new open hearth plant of the Illinois Steel Company. In the East a new seller seems to have appeared in the markets. Within the last two weeks there have been sales of fully 20,000 tons of Ingots and during the past week of about 25,000 tons of Billets at about $29 for Basic Open Hearth, a figure rather lower than was expected.

While nothing of special moment has developed in the Pig Iron trade, and the Central West is rather quiet, the volume of current business is good, with inquiries at hand for the second half of the year. Purchases of Basic Pig in eastern Pennsylvania for delivery during the second quarter have aggregated about 25,000 tons and there is some buying of spot Iron. Forge Iron, however, is weaker.

New England Malleable founders have bought an aggregate of 12,000 tons, and one lot of 5000 tons of Bessemer has been sold to the Algoma Steel Company in Canada.

Sales of Steel Rails during the week aggregate about 80,000 tons, among them being 28,000 tons for the New Haven road, 10,000 tons additional for the Southern Pacific, 12,000 tons for a trolley system at Los Angeles, 8000 tons for the Central Illinois Construction Company, 5000 tons additional for the Atlantic City railroad and 3800 tons for a Utah trolley system.

The Structural trade is facing a bright future. It is estimated that 200,000 tons of Steel will be required for buildings now planned in New York, and reports of a heavy amount of work in sight come from other centers. Building contractors are putting in their orders. Thus this week one contract involving from 15,000 to 18,000 tons was placed in this city for delivery during the first half of the year. An interesting order is one for 9000 tons of Steel for a Southern saw mill.

The open weather has had a sharply weakening effect upon Coke and continues to affect adversely values for Old Material. This in turn has led to weakness and irregularity in the Bar Iron trade.

Reports from foreign markets, so far as Steel and Finished products are concerned, are uniformly good, and the demands upon American makers are heavy. The condition of affairs, however, does not encourage expansion in that direction. How large a proportion of our make is now going abroad and how important a factor our country has become as an exporter of crude and finished rolling mill products is shown by the fact that the shipments to foreign countries during 1905 by the United States Steel Corporation aggregated 1,052,000 tons. This figure is particularly interesting because the Bureau of Statistics does not give tonnage figures at all in some important lines.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous

	Feb. 1, 1906.	Jan. 24, 1906.	Jan. 3, 1906.	Feb. 1, 1905.
PIG IRON:				
Foundry No. 2 Standard, Philadelphia	$18.50	$18.50	$18.50	$17.50
Foundry No. 2, Southern, Cincinnati	16.75	16.75	16.75	16.25
Foundry No. 2, Local, Chicago	19.25	19.25	19.25	17.50
Bessemer, Pittsburgh	18.35	18.35	18.35	16.60
Gray Forge, Pittsburgh	17.35	17.35	17.25	16.10
Lake Superior Charcoal, Chicago	20.50	20.50	20.00	18.50
BILLETS, RAILS, &c.:				
Bessemer Billets, Pittsburgh	26.00	27.00	26.00	23.00
Forging Billets, Pittsburgh	32.00	32.00	30.00	25.00
Open Hearth Billets, Phila	*29.00*	29.00	30.00	26.00
Wire Rods, Pittsburgh	34.00	34.00	33.00	31.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	16.50	16.50	16.50	16.00
O. Steel Rails, Philadelphia	*17.50*	17.75	18.25	17.50
O. Iron Rails, Chicago	23.00	23.00	23.00	21.00
O. Iron Rails, Philadelphia	*23.50*	24.50	24.50	23.00
O. Car Wheels, Chicago	19.00	19.00	19.00	16.50
O. Car Wheels, Philadelphia	18.75	18.75	18.75	16.00
Heavy Steel Scrap, Pittsburgh	*16.75*	17.00	17.50	16.00
Heavy Steel Scrap, Chicago	*14.75*	15.00	15.00	14.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	*1.83½*	1.83½	1.93½	1.63½
Common Iron Bars, Chicago	*1.75*	1.80	1.85	1.65
Common Iron Bars, Pittsburgh	*1.80*	1.85	1.90	1.65
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.54½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.40
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.64½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.50
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.64½
Beams, Pittsburgh	1.70	1.70	1.70	1.50
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.64½
Angles, Pittsburgh	1.70	1.70	1.70	1.50
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.55	1.55
Skelp, Sheared Steel, Pittsburgh	*1.60*	1.60	1.65	1.60
SHEETS, NAILS AND WIRE:				
Sheets, No. 27, Pittsburgh	2.30	2.30	2.20	2.20
Wire Nails, Pittsburgh	1.85	1.85	1.85	1.80
Cut Nails, Pittsburgh	1.75	1.75	1.75	1.75
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25
METALS:				
Copper, New York	*18.12½*	18.12½	19.25	15.25
Spelter, St. Louis	*6.00*	6.35	6.50	6.05
Lead, New York	*5.75*	5.75	5.95	4.45
Lead, St. Louis	*5.55*	5.45	5.90	4.37½
Tin, New York	36.75	36.50	36.05	29.65
Antimony, Hallett, New York	14.25	14.25	13.75	8.50
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.69	3.69	3.59	3.74

Chicago.

FISHER BUILDING, January 31, 1906.—(*By Telegraph.*)

Persistent reports of a weakening of the Western Iron and Steel trade are not borne out by actual conditions. The market, with the exception of a few finished lines, is as strong to-day as it was two months ago, immediately following the end of the great fall buying movement. Standard Section Rail tonnage overwhelms the Illinois Steel Company, and the situation in Light Rails and Track Supplies is stronger than at any time in the past six months. In Structural Shapes this district is contributing its share to the enormous tonnage to be rolled this year, contracts already placed for buildings, elevated road extensions and track elevations representing a total of nearly 30,000 tons, while the new work now under consideration will easily require 50,000 tons. Additional specifications for new undertakings that reached Structural fitters during the week include an 18-story building for the Chicago Telephone Company, a new hotel near the Rock Island Station and another sectional addition to the Boston Store. Plate tonnage booked by Western mills covers their output well through the first half, but specifications are temporarily light. Eastern Plate mills not so well favored with future tonnage are in position to make prompt deliveries and are securing the bulk of the small business offered. The country's Plate producing capacity, which was greatly increased in the last year and which will be still further added to by the operation of the new mill of the Cambria Steel Company, is the cause of the present apparent weakness rather than the falling off in consumption. Specifications for Steel Bars are double the output of Western mills and the decline in Scrap has brought about the lower prices on Iron Bars. Stocks of Sheets in the hands of distributors are above normal, as the mill shipments are all being taken in as rapidly as made on account

of the low prices at which this material was sold. From the standpoint of the manufacturer and dealer the situation in Wire products is as strong as could be desired, but Merchant Pipe shows no improvement and the lull in demand usual at this season is bringing out regular concessions of 1 point. While Southern Iron has been sold on the basis of $14, Birmingham, for No. 2, the three leading producers in the South are firmly maintaining a basis of $14.50.

Pig Iron.—Sales of both Northern and Southern Iron continue to be limited to small lots for immediate shipment, with here and there an order for 500 or 1000 tons spread over the first half. With their output well sold up through the first six months, Northern furnace interests are not offering concessions to stimulate buying and with a few exceptions consumers are covered to July. The three largest producers of Foundry Iron in the South are firmly maintaining a basis of $14.50 for No. 2, and the unsold capacity of one of these producers is less than 50,000 tons, scattered through the first half, equal to slightly more than a month's output. The overproduction of Forge Iron has resulted in concessions and the lower prices on Foundry Iron are being named on off grades and small lots that have to be moved. To avoid the payment of the 25 cent advance in Southern freight rates on March 1, consumers are hurrying delayed shipments and are anticipating shipments wherever possible, but the car situation in the South has not materially improved. The Illinois Steel Company is now drawing upon Columbus (Ohio) furnaces to make up its shortage of Bessemer and last week a second stack was blown in at its North Works. Heretofore, these furnaces have been operated alternately, but the tremendous Steel works requirements have made it necessary to operate the two stacks temporarily. The new furnaces under construction at the South Works will be available about May 1. Furnace B of the Iroquois Iron Company, which has been out for relining for 30 days, will be blown in the middle of February. We quote at Chicago as follows:

Lake Superior Charcoal	$20.50 to $21.50
Northern Coke Foundry, No. 1	19.75 to 20.00
Northern Coke Foundry, No. 2	19.25 to 19.50
Northern Coke Foundry, No. 3	18.75 to 19.00
Northern Scotch, No. 1	20.00 to 20.50
Ohio Strong Softeners, No. 1	20.05 to 20.30
Ohio Strong Softeners, No. 2	19.55 to 19.80
Southern Coke, No. 1	18.40 to 18.65
Southern Coke, No. 2	17.90 to 18.15
Southern Coke, No. 3	17.40 to 17.65
Southern Coke, No. 4	16.90 to 17.15
Southern Coke, No. 1 Soft	18.40 to 18.65
Southern Coke, No. 2 Soft	17.90 to 18.15
Southern Gray Forge and Mottled	16.40 to 16.65
Malleable Bessemer	19.25 to 19.50
Standard Bessemer	19.55 to 19.80
Jackson Co. and Kentucky Silvery, 6 %	21.30
Jackson Co. and Kentucky Silvery, 8 %	22.30
Jackson Co. and Kentucky Silvery, 10 %	24.30

Metals.—The Copper market is temporarily at a standstill, with sales limited to small amounts. Tin is strong, but has not advanced further since last week. The demand for Lead has fallen off and prices are off about ¼c. We quote: Casting Copper, 18¾c. to 19¼c.; Lake, 19½c. to 19¾c.; Pig Tin, car lots, 38¼c. to 38¾c.; small lots, 39c. to 40c.; Spelter, prompt delivery, 6¾c. to 7c. for car lots; Lead, Desilverized, 6c. to 6¼c.; Corroding, 6½c. to 6¾c. for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Sheet Zinc is $8 list, f.o.b. Laselle in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 15½c.; Heavy Copper, 15¼c.; Copper Bottoms, 14¾c.; Copper Clips, 15¼c.; Red Brass, 14½c.; Red Brass Borings, 12¼c.; Yellow Brass, Heavy, 11¼c.; Yellow Brass Borings, 9¾c.; Light Brass, 8½c.; Lead Pipe, 5c.; Tea Lead, 4¾c.; Zinc, 5c.; Pewter, No. 1, 24c.; Tin Foil, 29c.; Block Tin Pipe, 27½c.

(By Mail.)

Billets and Rods.—The Illinois Steel Company last week placed one of its new 50-ton Open Hearth furnaces in operation, and the remaining six in this plant will be fired shortly. The operation of this plant will increase the company's Steel output nearly 5000 tons a week, will be sufficient to provide for the demands of the new Structural mill and will provide more Steel for the open market than heretofore. Forging Billets in small lots continue to be sold for prompt delivery at $35 flat, and Wire Rods are quoted at $36 to $37, delivered, Chicago.

Rails and Track Supplies.—No orders of importance for Standard Section Rails were booked during the past week, although the Light Rail tonnage keeps up very well and the orders booked thus far this month are considerably in excess of the output. Specifications for Track Supplies are also heavy and indicate that the railroads are taking advantage of the open weather to make repairs and to carry on extension work. Quotations are unchanged as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.10c.; Track Bolts, 2.55c. to 2.60c., base, Square Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. Sections, $27 to $28; 25 lb., $28 to $29; 20 lb., $29 to $30; 16 lb., $30 to $31; 12 lb., $31 to $32, and lighter Sections down to 8 lb., $38 to $40, f.o.b. mill. Standard Sections are unchanged at $28, f.o.b. mill, full freight to destination.

Plates.—Eastern mills during the past week have been promising deliveries on almost all sections in from ten days to two weeks, and this, coupled with the light specifications that Western mills are receiving, would indicate that either the Plate consumption has temporarily fallen off or the capacity is now in excess of the country's demands. The greater portion of the tonnage placed by lake shipbuilders has already been delivered by the Illinois Steel Company and little new business is in sight, as practically all of the berths for the ensuing year have already been taken up. Prices remain firm and unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches, wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange and head quality, 25c. extra.

Structural Material.—From present estimates the consumption of Structural Material in this district this year will be almost equal to last year's requirements, although the amount required in the erection of office buildings will probably fall short of that of 1905. Contracts already awarded for material for this year's delivery include 8000 tons for the Northwestern Elevated, 6000 tons for the Chicago & Western Indiana elevated tracks, 7000 tons for the Chicago Commercial National Bank Building and approximately 5000 tons for the Pike Building, additions to the Auditorium Annex and the Fisher Building. The most important tonnage unplaced includes 11,000 tons for the County Building and approximately 25,000 tons to be used in the erection of new bridges. The demand for material for prompt delivery continues heavy and jobbers quote a minimum of 2.25c., although in rare cases as high as 2.75c. is being secured. On future shipments mill quotations are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.86½c.; Angles, larger than 6 inches on one or both legs, 1.96½c.; Beams larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Bars.—The Iron Bar market has again declined during the week, 1.75c. having been done on a railroad order. Small lots for early delivery can readily be placed at 1.80c., and owing to the declining Scrap market still lower prices are predicted on Bars. While new tonnage in Steel Bars is light, specifications are very heavy and still are in excess of shipments. We revise quotations as follows: Iron Bars, 1.75c. to 1.80c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.01½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.20c. to 2.25c.; Steel Bars, 1.85c. and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.20c. to 2.25c., full extras.

Sheets.—Sales of both Black and Galvanized Sheets from jobbers' stocks are not in proportion to the mill shipments, which indicates that the large jobbers and distributors are taking out all the tonnage contracted for at the low prices prevailing last fall, notwithstanding the temporary falling off in demand. On Galvanized Sheets the mills are not promising shipments in less than six to eight weeks, but owing to the large stocks in jobbers' hands consumers generally are experiencing little difficulty in securing prompt deliveries. Quotations are being well maintained, as follows: Blue Annealed, Nos. 9 and 10, 1.86½c. to 1.91½c.; Nos. 16 and 17, 2.06½c. to 2.11½c.; Box Annealed, Nos. 18 to 20, 2.26½c. to 2.31½c.; No. 27, 2.46½c. to 2.51½c.; No. 28, 2.56½c. to 2.61½c.; Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 17 to 21, 2.86½c.; Nos. 22 to 24, 3.01½c.; Nos. 25 and 26, 3.21½c.; No. 27, 3.41½c.; No. 28, 3.61½c.; No. 30, 4.11½c. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10c. to 2.20c.; Nos. 12 and 13, 2.15c. to 2.25c.; Nos. 14 and 15, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.50c. to 2.60c.; Nos. 22 to 24, 2.60c. to 2.70c.; No. 26, 2.65c. to 2.75c.; No. 27, 2.70c. to 2.80c.; No. 28, 2.80c. to 2.90c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3c. to 3.10c.; Nos. 22 to 24, 3.15c. to 3.25c.; No. 26, 3.35c. to 3.45c.; No. 27, 3.55c. to 3.65c.; No. 28, 3.75c. to 3.85c.; No. 30, 4.85c. to 5.05c.

Merchant Pipe.—The demand is seasonably light, prevailing quotations are being shaded to secure the business that is being offered, and 80 and 5, or 81, Pittsburgh, is now practically the open quotation, which is equivalent to 79.35, delivered, Chicago. Official discounts remain unchanged, however, and are as follows: Black Steel Pipe, 78.35 per cent. on the base sizes ¾ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher.

From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 inches.

Boiler Tubes.—Railroad tonnage continues heavy, and more than makes up for the comparatively light demand from other sources. Slight concessions are reported from time to time, but as a whole the situation is strong for this season of the year. Official discounts, base sizes, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2¾-inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	30
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Cast Iron Pipe.—Outside of the letting at St. Paul which comes up this week no large municipal contracts are under consideration in the West. Quotations, notwithstanding the reports of lower prices prevailing for Southern Iron, remain unchanged as follows: Water Pipe, 4-inch, $31; 6, 8, 10 and 12 inch, $30; over 12-inch, $29, with $1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Merchant Steel.—Notwithstanding the small amount of new business that is reaching the mills, the situation is without loss of strength on account of the large tonnage on manufacturers' books and specifications are still somewhat in excess of shipments. Prices are being firmly maintained, as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛ inch and larger, 1.90c., Pittsburgh; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

Coke.—Western consumers of Foundry Coke are not contracting for their first half requirements at the present time on account of the low prices that are being made for spot shipment. One consignment of strictly Connellsville Coke was disposed of in this market last week on the basis of $2.50 at the ovens, equivalent to $5.15, Chicago, just $1 less than the contract price asked for by the by-product Coke producers. Connellsville Coke continues to be offered freely at $5.40, Chicago, and under these circumstances consumers are by no means anxious to pay the high prices asked for extended deliveries and are depending upon consignments that are daily reaching the market for their current supply.

Old Material.—On account of the lower prices prevailing for Scrap, shippers are beginning to experience the usual difficulty with consumers, objections being raised against most of the material shipped with a view to securing concessions below contract prices. Transactions during the week have been limited and did not include any large tonnages. Railroad offerings also continue light, and the only list of consequence is that issued by the Chicago & Northwestern, which disposes of about 2000 tons of material. The offerings of railroads in the past month have been heavier than usual, and prices are somewhat easier. With the exception of a few items the entire list is weak, and a continuation of this mild weather, it is believed, will result in further concessions. The range of prices paid by large consumers to producers and dealers, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails	$23.00 to $23.50
Old Steel Rails, 4 feet and over	16.50 to 17.00
Old Steel Rails, less than 4 feet	16.50 to 17.00
Heavy Relaying Rails, subject to inspection	27.00 to 27.50
Old Car Wheels	19.00 to 19.50
Heavy Melting Steel Scrap	14.75 to 15.00
Frogs, Switches and Guards	15.00 to 15.50
Mixed Steel	13.00 to 13.25

The following quotations are per net ton:

Iron Fish Plates	$18.00 to $18.50
Iron Car Axles	23.50 to 24.00
Steel Car Axles	21.00 to 21.50
No. 1 Railroad Wrought	16.50 to 17.00
No. 2 Railroad Wrought	15.50 to 16.00
Locomotive Tires, smooth	14.25 to 14.50
Railway Springs	14.50 to 15.00
No. 1 Dealers' Forge	12.50 to 13.00
Wrought Pipes and Flues	12.00 to 12.50
Mixed Busheling	12.00 to 12.50
Iron Axle Turnings	12.00 to 12.50
Soft Steel Axle Turnings	12.00 to 12.50
Machine Shop Turnings	12.00 to 12.50
Cast Borings	10.25 to 10.75
Mixed Borings, &c	10.00 to 10.50
No. 1 Mill	9.00 to 9.50
Country Sheet	8.75 to 9.00
No. 1 Boilers, cut to Sheets and Rings	12.00 to 12.50
No. 1 Cast Scrap	14.50 to 14.75
Stove Plate and Light Cast Scrap	12.00 to 12.50
Railroad Malleable	15.00 to 15.25
Agricultural Malleable	14.00 to 14.50

The Chicago branch of the Wheeling Corrugating Company has leased the six-story and basement building at 23-27 North Clinton street. The offices of the company will be on the second floor and the balance of the building will be used for storage purposes. Removal will occur about May 1 from the old quarters at 47 Lake street. T. H. Jones is Chicago manager and Joseph A. Rees, assistant manager.

Philadelphia.

REAL ESTATE TRUST BUILDING, January 30, 1906.

The Iron and Steel markets maintain a strong front, although in a few lines the demand is not as urgent as it was six or eight weeks ago. Fortunately a good deal of business was entered at that time, so that there is no interruption in work at the mills, but new orders would be gladly welcomed on terms which were not considered sufficiently attractive around and shortly before the holiday times. In such an extraordinarily active market as we have had for several months it should, however, cause no surprise to find periods of dullness, without which it would be almost impossible to catch up with the demand, although the dullness is by no means general, neither is it very pronounced. The open weather has helped production, and while it has also stimulated consumption yet there is little doubt that conditions are easier than they would have been if the winter had been more severe. Reports are beginning to come out that winter wheat is not in as good condition as could be desired, and that the fruit crops are liable to be damaged by the unusually warm weather, and while such reports are premature or exaggerated there is no doubt that the open season has not been without its disadvantages. It cannot be said that there is anything less encouraging in the business outlook, however, although the time has arrived when it may be advisable to be more careful in watching the developments in both directions. The easier condition of the market (if it is going to be easier) will be due to increased production rather than to decreased consumption, but that point may not be reached for some time, although there can be no question that we are gradually getting nearer to it, and it may be distinctly in evidence before midsummer. For the present business is in excellent shape, large orders in hand, other important business in prospect and prices absolutely impregnable.

Pig Iron.—The market is firm but not particularly active. There is no scarcity of business, however, and makers of Iron would be glad to have a period of quietness, as they are heavily sold ahead and are not sure that they will be safe in adding to their responsibilities at to-day's prices, but the requirements of consumers are very heavy and they find it necessary to buy more Iron than they had expected, hence the continued drain on the furnaces. In this territory it is said that stocks carried by furnaces are not more than two or three days of their full production, while the urgency for deliveries is so great that they are afraid of worse rather than better conditions. There is a very general belief that the next eight or ten weeks will be a severe test. After that date there is a reasonable prospect that supplies will be more liberal, but for the time being there is considerable anxiety in regard to February and March deliveries. This applies more particularly to Basic and Low Phosphorus Irons, which are practically swept up clean. Foundry and Mill Irons are none too plenty, but they can be had in reasonably good time and in sufficient quantity to keep things moving, which cannot be said of steel making materials. The disposition to buy for the last half of the year is becoming more general, but sales have not been heavy, although a trifle more money has been paid both for the second and third quarters, but on the whole it cannot be said that prices are higher. Inside quotations are less frequent, so that in that sense the market is better, but the range for Philadelphia and nearby deliveries is about as follows, which is virtually last week's prices:

No. 1 X Foundry	$19.00 to $19.50
No. 2 X Foundry	18.50 to 18.75
No. 2 Plain	17.75 to 18.25
No. 2 Southern	18.75 to 19.00
Standard Gray Forge	17.00 to 17.25
Basic	18.00 to 18.10
Low Phosphorus	24.50 to 25.50
Bessemer	19.50 to 19.75
Malleable Iron	19.00 to 19.25

Steel Alloys.—There is no settled market and prices are hardly quotable in an article of this kind. Holders ask anywhere from $150 to $175 for spot Ferromanganese. Spiegeleisen could be had at $45 to $50 for shipments during second quarter of the year and $38 to $40 for the last quarter. In a general way asking prices are about as follows, the higher figures being for early shipments:

Silico Spiegel, 10 and 18 per cent	$44.00 to $55.00
Ferrosilicon, 50 per cent	100.000 to 110.00
Spiegeleisen, 20 per cent	38.00 to 45.00
Ferromanganese, 80 per cent	100.000 to 175.00

Muck Bars.—Business is extremely dull, but Bars from all Pig Iron have been sold at $30 delivered, while Scrap Bars could be had at around $29 delivered.

Steel.—There has been a better demand for Steel during the past few days, and good sized lots have been taken at

about $29 delivered. Small lots command about $30 and Forging Billets $35 to $38.

Plates.—There is no particular rush, but mills have so much work on their books that new business is not of any great importance at the present time. Specifications from car shops, bridge works, shipyards and other large consumers are somewhat pressing, however, so that the mills are being run to their full capacity and are likely to be for an indefinite period. Slight changes have been made in quotations, which are now as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.73½	1.78½
Flange or Boiler Steel	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.93½	1.98½
Marine	2.13½	2.18½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Per 100
3-16-inch thick	$0.10 pounds extra.
Nos. 7 and 8, B. W. G	.15 "
No. 9, B. W. G	.25 "
Plates over 100 to 110 inches	.05 "
Plates over 110 to 115 inches	.10 "
Plates over 115 to 120 inches	.15 "
Plates over 120 to 125 inches	.25 "
Plates over 125 to 130 inches	.50 "
Plates over 130 inches	1.00 "

Structural Material.—The only change is that supplies are somewhat less restricted. New mills are getting in good working condition and it is thought that nearly 1000 tons per day increased capacity will be in operation inside the next 60 days. Some mills require four to six months to make deliveries, but in most cases buyers can get what they want in 30 to 60 days, although they may have to divide their order to accomplish it. Prices firm and unchanged: Beams, Channels and Angles, 1.83½c. to 2c., delivered.

Bars.—The Bar trade is less active than it was some time ago, although most of the mills are still fully employed. New business comes in slowly, however, and there are free sellers at 1.83½c. delivered. Steel Bars are quoted at 1.63½c., but it would be difficult to get deliveries in less than 60 to 75 days, particularly of the small sizes.

Sheets.—The market is again rather dull and the feeling is not as buoyant as during the early portion of the month. Prices are unchanged, however, with small sales, as follows: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 to 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—The situation is hard to define with much closeness, but there is no doubt that buyers have found the market in their favor recently. No. 1 Steel Scrap can be had at $17.25 and most other descriptions at some reduction, but there is so little doing that it is hard to say just what the market is. Bids are made with much reluctance and as holders are unwilling to offer material without some prospect of making a sale it is a kind of stand off on both sides. The following bids and offers for deliveries in buyers' yards are as near the market as can be given:

Scrap Steel Rails	$17.50 to $17.75
No. 1 Steel Scrap	17.00 to 17.50
Low Phosphorus Scrap	23.50 to 24.00
Old Steel Axles	20.00 to 21.00
Old Iron Axles	27.00 to 28.00
Old Iron Rails	23.50 to 24.50
Old Car Wheels	18.75 to 19.00
Choice Scrap, R. R. No. 1 Wrought	20.50 to 21.50
No. 1 Yard Scrap	18.00 to 19.00
Long and Short	17.75 to 18.25
Machinery Scrap	16.00 to 16.50
Wrought Iron Pipe	15.50 to 16.00
No. 1 Forge Fire Scrap	16.00 to 16.50
No. 2 Light Ordinary	12.50 to 13.00
Wrought Turnings	14.25 to 14.50
Axle Turnings, Choice Heavy	15.00 to 15.50
Cast Borings	10.50 to 11.00
Stove Plates	13.00 to 13.50
Grate Bars	12.50 to 13.00

Cincinnati.

FIFTH AND MAIN STS., January 31, 1906.—(*By Telegraph.*)

Pig Iron.—The past week has been exceedingly quiet and no sales have been made out of the regular line. There seems to be very little disposition either on the part of buyers or sellers to force matters and the market is what may be termed a waiting one. That the outlook is possibly a degree below what it was a week since is practically acknowledged, and is evidenced by the fact that with rare exceptions it is impossible to obtain more than $14, Birmingham, for Southern No. 2. Last week we were able to find considerable $14.50 Iron on the market, but since then several of the furnaces have dropped 50c. per ton and are ready for business on that basis. It seems to be a settled fact that most consumers are covered for the first half, and as the furnaces are also sold up for that period it is but natural that there should be a lull at this time. The general foundry trade is reported to show signs of improvement and to have considerable business ahead. Gray Forge and the lower grades are reported to be in plentiful supply, but the demand is much restricted and they are possibly the weakest point in the market to-day. Northern furnaces are said to be holding well up on prices and the schedule for these Irons is practically unchanged. Beginning March 1, the 25c. advance in freight rates on Pig Iron from Southern points will be effective, making a $3 rate into this territory. Freight rates from Hanging Rock district to Cincinnati are $1.15. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$17.25
Southern Coke, No. 2	16.75
Southern Coke, No. 3	16.25
Southern Coke, No. 4	15.75
Southern Coke, No. 1 Soft	17.25
Southern Coke, No. 2 Soft	16.75
Southern Coke, Gray Forge	15.25
Southern Coke, Mottled	15.00
Ohio Silvery, No. 1 (8 % Silicon)	21.15
Lake Superior Coke, No. 1	19.15
Lake Superior Coke, No. 2	18.65
Lake Superior Coke, No. 3	18.15
Car Wheel Irons.	
Standard Southern Car Wheel	$22.75
Lake Superior Car Wheel	21.50

Coke.—The situation is very quiet and the market is weak. Weather conditions have been so favorable that operators have been able to turn out a full capacity. Then, too, the car situation is now quite satisfactory, and shipments are coming forward with regularity. We quote the best grade of Foundry Coke from $2.90 to $3, f.o.b. ovens.

Finished Iron and Steel.—The mills are now said to be able to catch up somewhat on contracts, but deliveries are still from two to three months behind. New Structural specifications are coming forward, and the outlook for the early spring is very strong. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.65c., with half extras; the same, in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—Considerable spot shipments have been made, and dealers are turning stock with a great deal of activity. We quote dealers' prices, f.o.b. Cincinnati: No. 1 Railroad Wrought Scrap, $17 to $17.50 per net ton; No. 1 Cast Scrap, $14 to $14.50 per net ton; Iron Rails, $20 to $21 per gross ton; Steel Rails, rolling mill lengths, $15 to $15.50 per gross ton; Relaying Rails, 56-lb. and upward, $24.50 to $25 per gross ton; Iron Axles, $22.50 to $23 per net ton; Car Wheels, $16.50 to $17 per gross ton; Heavy Melting Scrap, $15 to $15.50 per gross ton; Low Phosphorus Scrap, $18.50 to $19 per gross ton.

Birmingham.

BIRMINGHAM, ALA., January 29, 1906.

Pig Iron.—Quite a difference in views prevails in the Iron market this week. A majority of the furnaces are holding firm at prices which have been prevailing for some months, while others seemingly gave way to pressure, and the result is a number of orders have been booked for Northern shipment on a $14 No. 2 Foundry basis. While one furnace has been selling at this reduced price, another reports the sale of several hundred tons of No. 4 at $15, which would mean $15.75 for No. 2. The sales at $14 are understood to be for second quarter delivery, and it is assumed that the advance of 25 cents per ton in freight March 1 had something to do with the concession in price, which would seem to indicate that the market is not sufficiently strong to make the consumer pay the additional freight. With practically the entire output of all the furnaces sold, it is rather surprising that any weakening should occur at this time, but it is argued by the leading producers that it will not be general but be confined to one or two furnaces that withdrew from the market the latter part of last year. From best information obtainable the concession in price applies only for Northern delivery, the furnaces doing the cutting still demanding $14.50 for Southern shipment. Very little new business is reported this week, but shipments have been quite heavy and stocks on furnace yards are daily growing smaller. The production for January, in Alabama, while probably slightly exceeding that of December, will only be about normal. Several furnaces which were expected to go in blast the first of the year have not for various reasons yet been started.

Old Material.—The market this week has been decidedly weaker. A general reduction of $1 per ton on all grades has been quoted by dealers and no large sales have been reported even at this concession. Good stocks are in the yards and prompt shipment could be made. Quotations are approximately as follows per gross ton, f.o.b. cars here:

Old Iron Rails	$20.50 to $21.00
No. 1 Railroad Wrought	18.00 to 18.50
No. 2 Railroad Wrought	17.00 to 17.50
No. 1 Country Wrought	16.00 to 16.50
Wrought Pipe and Flues	13.00 to 13.50
Mixed Steel	12.00 to 12.50
No. 1 Machinery Cast	11.00 to 11.50
Stove Plates and Light Cast	10.00 to 10.50

Cast Iron Pipe.—Among the larger inquiries this week is one from the Isthmian Canal Commission and another from Havana. Shipments are reported very heavy and inquiries are being turned down daily. Much of the Pipe from the district is going to Pacific Coast points, though scarcity of suitable cars for that delivery is retarding the movement. Following are about the prevailing prices on Water Pipe per gross ton:

4 to 6 inch	$27.00
8 to 10 inch	26.00
12 to 20 inch	25.00
24 to 48 inch	24.00

Cleveland.

CLEVELAND, OHIO, January 30, 1906.

Iron Ore.—It is now reported in vessel circles here that the big block of Ore recently discussed as not being covered by season contracts is United States Steel Corporation Ore. It is said in the same quarter that the amounts allotted by the corporation to the various merchant fleets has been smaller than in past years. The explanation is said to be that the Steel Corporation has been negotiating for control of one or two big fleets, which, with boats building, will give it tonnage sufficient to transport in a season 20,000,000 tons of Ore. In the event the negotiations fail it is said that the Ore will be apportioned among the merchant fleets. Recent figures on the new ships built in the past two years show that the Ore producing concerns have taken more than 50 per cent. of the whole, indicating that they propose to carry as much of their Ore in their own bottoms as possible. The labor situation is beginning to clear somewhat and there is less talk now of a tie up at the opening of the season of navigation. No new sales of Ore are reported. Prices hold as before at $4.25, f.o.b. Lake Erie docks, for Old Range Bessemer, $4 for Mesaba Bessemer, $3.70 for Old Range non-Bessemer and $3.40 to $3.50 for Mesaba non-Bessemer, all for base Ores.

Pig Iron.—In the Foundry trade the disposition of buyers is to hold off for the present. The recent recession has had the customary effect of arousing expectations of further declines. It is known that the available supply of spot Iron for quick shipment in this immediate territory is in the possession of two concerns which are firm as to prices. It is a fact, however, that some of the Cleveland concerns are showing a willingness to divide with the customer the freight differential between Cleveland and the Valleys. Thus No. 2 Foundry is sold by local furnaces at $18, delivered, the freight rate from the Valleys being 85c. In the main the Valley furnaces are holding for $17.50 at furnace for No. 2, although on good orders that might be shaded by 25c. to 35c. The buying is only fair for second quarter delivery, while neither side is willing to enter on large contracts for third quarter. The market seems to take the position now that lower prices will prevail during the last half of the year. Coke is easy. Prices for spot shipment have shown a decided break in the past week and now the best grades of 72-hour are sold on the basis of $3 to $3.25 at the ovens and Furnace Coke at $2.25 to $2.50 at the ovens.

Finished Iron and Steel.—Sentiment is somewhat mixed, with an increasing tendency toward easier conditions. The Billet market is off; Bars are not so much in demand; some mills have Plates to sell, and new orders are light in most all lines. On the other hand the mills are sold up in large Plates, in Sheets and Structural Steel, and in some lines premiums are quite common. The supply of Billets seems to have been increased, principally from the smaller mills. The only Steel offered by the larger mills is of such analysis as the mills themselves cannot use. The demand is good, but the price has run off, and now Bessemer re-rolling Billets are selling freely at $25 to $26, Pittsburgh, with Open Hearth Billets quoted at $28, Pittsburgh, and Forging Billets about $30. Reports have it that sales are being made so readily at these prices that the available supply will be quickly sold up. Mills are reporting that larger sized Steel Bars are now much easier and are to be had in 30 days, with prices holding about steady at 1.50c., Pittsburgh, for both Bessemer and Open Hearth. The easiest situation is on 3-inch by ½ and larger, the smaller sizes being comparatively scarce. This situation is about the reverse of recent conditions. Bar Iron, on the other hand, shows no weakness, with many of the mills out of the market for the time being. On Plates some mills report deliveries in 30 to 60 days possible on general specifications. On Tank Steel premiums are being paid to the Eastern mills, while some sales of Universal Plates have been made at $2 over the association price. In Structural Steel some of the mills can now make quicker deliveries on smaller Angles, but the demand in general is told by the fact that consumers have been taking the material from the mills and cutting it into the desired lengths themselves. Sheet mills are so well filled with lower priced business that little room is left for the orders now coming in. This has thrown an increased amount of business upon the jobbers, who are beginning to have some difficulty in meeting the demands. The prices out of stock hold as they have been, at 2.10c. for No. 10 Blue Annealed, 2.75c. for No. 28 One Pass Cold Rolled and 3.75c. for No. 28 Galvanized.

Old Material.—The dealers are somewhat bothered by the heavy receipts of Scrap as a direct result of the open weather. This has been pouring into the market freely of late and threatens to break prices, especially as the mills are not buying freely. The market is comparatively steady, the following being dealers' prices to the trade, gross tons: Old Steel Rails, $16.50 to $17.50; Old Iron Rails, $23 to $23.50; Iron Car Axles, $16.50 to $17.50; Heavy Melting Steel, $17 to $17.50. Net tons: Cast Borings, $9.50 to $10; No. 1 Busheling, $15 to $15.50; No. 1 Railroad Wrought, $17 to $18; Iron Car Axles, $22 to $23; No. 1 Cast, $15; Stove Plate, $11; Iron and Steel Turnings and Drillings, $11 to $12.

Pittsburgh.

PARK BUILDING, January 31, 1906.—(*By Telegraph.*)

Pig Iron.—The demand has been very quiet the past week. Prices on Bessemer and Forge are strong, while Basic is decidedly weaker and Foundry Iron is not quite as firm as it was. A local interest has bought in the past week or two 10,000 to 15,000 tons of Northern and Southern Foundry Iron for delivery over the first six months of this year. It is not likely that the United States Steel Corporation will buy any new Bessemer Iron for second quarter delivery for some little time. The market on Bessemer Iron is quite firm on the basis of $17.50 to $17.75, Valley furnace, but at the same time there have been sales of a number of small lots of Bessemer Iron held by dealers, and which had to be moved at $17.25, Pittsburgh. Such tonnage on the market, however, has been pretty well cleaned up. A local Steel interest is reported to have bought 10,000 tons at this price for extended delivery. The minimum price to-day is $17.50. Northern No. 2 Foundry Iron is held at $17.25 to $17.50, Valley furnace, equal to $18.10 and $18.35, Pittsburgh. Southern No. 2 Foundry is held at about $14.25, Birmingham, equal to $18.60, Pittsburgh. Forge Iron is quite firm, and Northern makes are held at $16.50, Valley furnace, equal to $17.35, Pittsburgh. Southern Forge is held at about $12.75, Birmingham, equal to $17.10, Pittsburgh.

Steel.—We note a continued scarity in Billets and Sheet and Tin Bars and prices are very firm. Bessemer and Open Hearth Billets for prompt shipment have sold as high as $27, Pittsburgh, but on contracts for forward delivery $26 could probably be done on Bessemer. Sheet and Tin Bars in random lengths are $27, maker's mill, to consumers who have regular contracts, but small lots for prompt shipment are reported to have sold as high as $28, Pittsburgh.

(*By Mail.*)

The Iron trade is quiet, but as yet the market is showing no signs of weakness, with the exception of Coke, which is very weak, and also of Scrap, which has gone off to some extent. The enormous tonnage on the books of the mills practically prohibits any marked decline in prices, but at the same time there is a strong feeling among consumers that the market is as high as it will go and there is no incentive to contract ahead with the idea that prices may be higher later in the year. The large Steel interests are firmly of the belief that if the whole market can be held about on the present basis and not allowed to go any higher it will be better for all concerned; and this is also the view of consumers, who feel that there is nothing in the situation to warrant higher prices. The demand for Pig Iron has been rather quiet, but with the exception of Basic, prices are quite firm. Bessemer is strongly held at $17.50 to $17.75, Valley furnace, and sales of several lots, including one of 5000 tons, are reported at $17.75 at furnace; but it is understood that in cases where Bessemer has been sold in large lots at $17.75 at furnace prices have been guaranteed against decline. We understand this was done in the case of the Bessemer Iron bought by the Steel Corporation for second quarter delivery and which was sold at this price. There is a moderate inquiry for Foundry Iron and consumers are specifying very freely on contracts placed some time ago. Northern No. 2 Foundry is held at $17.25 at furnace, but on a firm offer one or two sellers might shade this price. Forge Iron is quite firm, Northern brands being held at $16.50, Valley furnace, or $17.35, Pittsburgh. Southern Forge is held at $13, Birmingham, which with $4.35 freight added makes the price $17.35, Pittsburgh, the same figure at which local Forge is selling. Steel continues scarce, Bessemer Billets being held at $26 and Open Hearth at $27, Pittsburgh. Sheet and Tin Bars in random lengths are $27, maker's mill, to consumers who have regular contracts. Prices on Scrap

are slightly lower. Coke is very weak, strictly Connellsville Furnace being offered as low as $2.15 and Foundry $2.75 at oven for prompt shipment. New business in Finished Iron and Steel continues moderately heavy, but is not as large as it was some time ago.

Ferromanganese.—Ferro, for prompt shipment, continues very scarce and continues to bring exceedingly high prices. Several small lots have been sold for spot shipment at $150 to $160 a ton. For delivery in first and second quarters about $125 is being quoted, but we do not hear of any tonnage being placed.

Muck Bar.—There is a fair amount of inquiry and prices are firm. Local brands made from all Pig Iron are held at $31.50 to $32, Pittsburgh. Eastern makes are being offered at about $31, Pittsburgh.

Steel Rails.—Orders continue to flow into the mills, and we can state officially that 2,500 tons of Rails for this year delivery have already been booked. The demand for Light Rails is moderate and prices are firm, as follows: 8-lb., $36; 10-lb., 32; 12-lb., $30; 16-lb., $29; 20-lb., $28.50; 25 to 45 lb., $27.50 to $28, maker's mill.

Rods.—Prompt deliveries of Rods are almost as hard to get as Billets and prices are very firm. We quote Bessemer and Open Hearth Rods at $34 and Chain Rods $35, Pittsburgh.

Skelp.—While the new business being placed is only fairly heavy, the mills are filled up on contracts on which they are somewhat behind on deliveries. Prices are firm and we quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.70c. to 1.75c., and Sheared Iron Skelp, 1.80c. to 1.85c., Pittsburgh. These prices are for ordinary widths and gauges.

Structural Material.—We are officially advised that H. C. Frick will erect a 24-story office building at Wood and Diamond streets, this city, and the Steel, about 6000 tons, has been placed. The Jones & Laughlin Steel Company has taken about 3000 to 4000 tons for the Commonwealth Trust Company Building, and about 5000 tons for the Union National Bank Building. The A. & S. Wilson Company is the general contractor for the latter building, and will likely erect the entire structure. The Fort Pitt Bridge Works will fabricate at least part of the Steel for these two buildings. A good many smaller jobs have been placed, and the two leading Structural Steel fabricators, the American Bridge Company and McClintic-Marshall Construction Company, are filled up for practically the balance of this year. Others are filled up for from four to six months. Prices are firm and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.75c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—New business in Plates is fairly large, but not as heavy as some time ago. There is some complaint that consumers are not specifying on contracts quite as freely and there is less trouble in getting deliveries, some of the Eastern mills and also some of the smaller Western mills being in shape to make reasonably prompt shipments. There are a number of small mills that roll the smaller sizes and in some cases recently some of these mills have shaded official prices about $1 a ton. We quote: Tank Plates, ¼ inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A."	.40
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ⅛ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—A moderate amount of new business is being placed, but the mills are running mostly on contracts placed some time ago, on which buyers are specifying quite freely. The Sheet mills that buy Bars in the open market are still having trouble in getting deliveries, and this occasionally interferes with operations. Prices are fairly firm and we quote: Black Sheets, Box Annealed, one pass through cold rolls, Nos. 10 to 12 gauge, 2c.; Nos. 13 and 14, 2.05c.; Nos. 15 and 16, 2.10c.; Nos. 17 to 21, 2.15c.; Nos. 22 to 24, 2.20c.; Nos. 25 and 26, 2.25c.; No. 27, 2.30c.; No. 28, 2.40c.; No. 29, 2.55c., and No. 30, 2.65c. Galvanized Sheets: Nos. 10 and 11, 2.35c.; Nos. 12 to 24, 2.45c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.70c.; Nos. 22 to 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.25c.; No. 28, 3.45c.; No. 29, 3.70c., and No. 30, 3.95c. We quote No. 28 Gauge Painted Roofing Sheets at $1.65 per square and Galvanized Roofing Sheets, No. 28 gauge, at $3 per square for 2½-inch corrugations. Jobbers charge the usual advances over these prices for small lots. On a desirable order it is possible that some mills might shade the above prices about $1 a ton.

Bars.—There is a decided weakness in prices of Iron Bars and new business is not very heavy. Orders for Steel Bars are not as plentiful as some time ago, but specifications on contracts are heavy and the mills have sufficient tonnage on their books to take their output for some months to come. We quote Steel Bars at 1.50c., base, half extras, for carloads and larger lots, while Iron Bars are quoted at 1.80c. to 1.85c., Pittsburgh.

Hoops and Bands.—New business is very light, but specifications on contracts are coming forward very freely. We quote Steel Hoops at 1.85c. and Bands to be used for cooperage purposes at 1.85c., the latter carrying full Hoop and Band extras. Bands for other than cooperage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery.

Tin Plate.—A very heavy tonnage in Tin Plate was booked by the leading mills before the recent advance in prices, and it is said that some makers are practically sold up to July 1 at prices ruling before the advance was made. Only a fair amount of new business is being placed, but most of the mills are fairly full of work and are making heavy shipments. We quote $3.50 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days. Some mills allow a rebate of 5c. a box on the above price to the large trade.

Merchant Steel.—Very little new work is being placed, but the mills are busily engaged on contracts placed some time ago. Prices are very strong and we quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛-inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. Demand for Shafting is heavy.

Railroad Spikes.—A fair amount of new business is being booked, which with old contracts keeps the mills very busy. We quote $2 to $2.05 per 100 lbs., Pittsburgh.

Spelter.—New demand is very dull and prices are slightly weaker. We quote prime grades of Western Spelter at 5.30c., St. Louis, equal to 5.42½c., Pittsburgh.

Merchant Pipe.—We are officially advised that the report printed in the New York papers that Spang, Chalfant & Co. had sublet about 50 miles of Pipe to another mill is untrue. This firm is amply able to take care of all its contracts, having recently made large additions to its plant. An inquiry is in the market for 50 miles of 6-inch Line Pipe for shipment to Mexico, but nothing has been done with it as yet. The demand for Merchant sizes continues heavy, and the leading mills are pretty well filled up for several months. Prices continue very low, the extreme discount on Merchant sizes being about 81 per cent. off to the large trade. Official discounts are as follows:

Merchant Pipe.

	Jobbers, carloads.				Consumers, carloads.			
	Steel.		Iron.		Steel.		Iron.	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
	%	%	%	%	%	%	%	%
⅛ and ¼ inch	72	56	69½	53½	71	55	68½	52½
⅜ inch	74	66	73½	61½	73	59	72½	60½
½ inch	76	64	73½	61½	75	63	72½	60½
¾ to 6 inches	80	60	78	68	79	69	77	67
7 to 12 inches	75	60	73	57½	74	59	72	56½
Extra strong, plain ends:								
⅛ to ⅜ inch	65	53	62½	50½	64	52	61½	49½
½ to 4 inches	72	60	69½	57½	71	59	68½	56½
4½ to 8 inches	68	56	65½	53½	67	55	64½	52½
Double extra strong, plain ends:								
½ to 8 inches	61	50	58½	47½	60	49	57½	46½

Boiler Tubes.—This is the off season in the Boiler Tube trade, but we note a fairly active demand for Locomotive Tubes. Like Pipe, prices on Boiler Tubes are low, our discounts sometimes being shaded on desirable orders. Official discounts are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	41	46
1¾ to 2¼ inches	41	58
2½ inches	46	60
2¾ to 5 inches	53	66
6 to 13 inches	41	58

Iron and Steel Scrap.—There is a fair amount of inquiry for Old Material, but prices are not as firm as they have been, dealers being more willing to shade prices in order to make sales. It is not believed that any marked decline will take place in prices of Scrap, as it usually moves in sympathy with Pig Iron. Dealers quote about as follows: Heavy Melting Scrap, $16.75 to $17; No. 1 Wrought Scrap, $19 to $19.25; Bundled Sheet Scrap, $14.75 to $15; Cast Iron Borings, $10.25 to $10.50; Old Iron Axles, $26; Old Steel Rails, short pieces, $16.75 to $17; Machinery Cast Scrap, $15 to $15.25; Steel Turnings, $13.25 to $13.50, and Cast Steel Scrap, $17, all in gross tons, f.o.b. Pittsburgh.

Coke.—Prices on both Furnace and Foundry Coke are decidedly lower. A number of Coke makers in the Connellsville region refused to sell their Coke last fall, believing that when winter weather started and shipments were retarded they would be able to get high prices. But they have been disappointed, as the winter has been very open, the supply of cars has been plentiful and the output enormously heavy, so that a large tonnage of Coke is piled up in the region and has to be moved. On Connellsville Furnace Coke for prompt shipment as low as $2.15 at oven has been quoted and on 72-hour Foundry about $2.75 a ton at oven. These prices are on Coke for prompt shipment and for which it is very difficult to find a market. The output continues the heaviest in the history of the trade. Last week the Upper and Lower Connellsville regions turned out 384,847 tons.

The Ohio Iron & Metal Company, First National Bank Building, Chicago, dealer in Pig Iron, Steel, Scrap and Coke, has opened branch offices in rooms 920, 921 Farmers' Bank Building, Pittsburgh, with A. M. Crane in charge.

G. P. Bassett, Jr., formerly Pittsburgh manager of Rogers, Brown & Co., has opened offices in the German National Bank Building, Pittsburgh, as a dealer in Pig Iron and Coke.

German Iron Market.

BERLIN, January 18, 1906.

The rise in Pig Iron prices is growing more general since the new year began. This week the advance in Hematite and Foundry grades, which was mentioned in my last letter as having been postponed in December, has been ordered. The advance on Hematite is 10 marks, which makes the new price 82 marks; Foundry No. 1 is marked up 7 marks to 78 marks and No. 3 up 3 marks to 70 marks. These prices apply for Westphalia and the Rhine Province. For North Sea and Baltic ports, where English Iron comes into competition with German, the advance on Hematite is only 5 marks and on Foundry grades 1 mark per ton. On the Düsseldorf Coal and Iron Exchange about ten days ago the Spiegeleisen price went up to 86 marks, as compared with 81 about the middle of December. At the same time Bessemer rose from 72 to 78, one grade of Puddling from 59 to 65 and English Pig from 72 to 73 marks. At a meeting of the Sheet works last week it was voted to raise prices to 135 marks, as compared with 127.50 to 130, the prices quoted in my last letter. At this meeting it was stated that the works are all sold out for four months and are working at their full capacity. Some lines of standard hardware have just been advanced 10 per cent., owing to the increased cost of raw materials. Employment on home and foreign orders is extraordinary.

Increasing Export Demand.

From the export market it is reported that the new year has brought an unusually strong increase in the demand. Particularly for Hematite is there a more active request than at the end of last year. Some large orders are for prompt delivery, but many run for the entire year. Canada is sending good orders for Steel, and much better business is expected from that quarter, as Canada is turning to Europe to buy goods which it is impossible to get in the United States owing to the unprecedented consumption of the American home market. Manufacturers of Bridge and other Structural Shapes are getting large foreign orders. The greatest demand, however, is for all forms of Iron and Steel for ship construction, and this, of course, comes from England. This form of products is also in excellent demand for home shipyards, which are unusually well supplied with orders. South Africa is increasing its orders, chiefly for mining equipment. Rails and other railroad supplies are finding a much better market in South America, particularly in Argentine and Chili, and German manufacturers expect still further to extend their business there in the specialties named, since it seems impossible for those countries to secure in the American market the supplies demanded. Large orders from the two countries mentioned have recently arrived in Germany, but it is said that they have not yet found takers. Altogether the year sets off with the best possible prospect for export business; prices are good and will probably become still more remunerative, and it is highly probable that the German Iron industry will this year do a more profitable business with foreign countries than ever before.

The Home Demand Heavy.

The furnaces report that the demand for Pig Iron is far beyond their capacity, and it is quite impossible to fill all the orders already received for the first half of the year, let alone the new orders constantly coming in. At a meeting of the Rolled Wire men several days ago orders on hand were stated at 60,000 tons above the allotments for the past quarter, and the demand for Wire was described as extraordinarily active. The demand for Iron Ores remains uncommonly heavy and the pressure of the furnaces to supply themselves with foreign Ores is increasing. The harbor facilities at Emden, which is the North Sea end of the Dortmund-Ems Canal, have already proved insufficient to handle the great number of vessels coming there laden with Swedish Ores. Although the harbor was finished only several years ago, the Government is about to double its capacity. Labor conditions in the Siegen Ore district give considerable concern just now, since there is danger that the miners will go out on a strike. The working force at Krupp's Glücksbrunn mine have already struck, while the general agitation for higher wages in the district gives good ground to fear that a strike may break out and cause a general tie-up of the Ore supplies of the district.

The Steel Syndicate.

The fact that the Steel Verband expires according to contract in the spring of 1907 is already causing much talk as to its renewal. The approaching reconstruction of the great combination is also having a marked effect in one direction upon the great Iron companies. Many of them are now engaged in enlarging their producing capacity in order to be able to put in claims for bigger allotments next year. A number of the chief companies are coming forward with plans to borrow money or to issue new capital. Their watchword is to modernize plants, where they are out of date, by putting in the most effective machinery. All this will naturally increase the difficulties of the negotiations for the renewal of the Verband, and not a few expressions have already been heard from important Iron men indicating some doubt as to whether the combination will get a new lease of life at all.

Just now the Verband is still occupied with questions of subordinate organizations and their allotments. The refusal to increase the allotments in Bars and Rolled Wire was mentioned in this correspondence above a month ago. The proposal to make a 5 per cent. increase has again come up, based upon the extraordinary volume of the demand in both specialties. The Verband has appointed a meeting for next week to consider the matter, and it is now regarded as certain that the allotments will be increased as indicated.

The Upper Silesian branch of the Verband has just issued a highly satisfactory report on the state of business in that district. It notes an increased activity in sales, while specifications are coming in to an extent far beyond the shipping capacity of the works. New contracts are being effected in large volume, notwithstanding the higher prices demanded. The intensity of the export demand has increased within the past few weeks.

General Notes.

At a recent meeting of the manufacturers of machine tools, held at Düsseldorf, it was reported that these establishments are now generally well employed and some of them have an uncommon run of work. The standing complaints about low prices, which were the order of the day several years ago, have entirely ceased, while in some cases advancing prices are reported. Some of the shops are putting on night forces of workmen in order to be able to deliver goods on time.

The Krupp Company has decided to install a plant for making Steel by an electrical process and has given a contract to the Siemens & Halske Company, Berlin, to put in the equipment. The process used will be that of Kjellin, a Swedish metallurgist, who employs an induction furnace for the production of large masses of Steel. Krupp will produce by the new process both ordinary Steel and the highest qualities. It may be mentioned here that Kjellin, according to reports just printed in the German press, has also developed a method for making Pig Iron by electricity, while another Swedish engineer has just brought out a second process.

The situation in the Coal trade since the beginning of the year has only changed in the direction of still greater activity. The Government has for some days been able to place at the mines all the cars called for; hence the movement of Coal has assumed record breaking proportions. Last week the syndicate, however, saw that it would be unable to fill all its contracts, and therefore it instructed its customers at Hamburg, Bremen and Mediterranean ports to buy English Coal on its account, the syndicate to make good to them any additional cost. Much English Coal has also arrived at Ruhrort, the principal shipping port of the Essen region. German mines, in view of the enormous demand at home, are curtailing their export shipments, notably to France, Belgium and Holland. The syndicate has recently authorized the mines to take out Coal to the full extent of their allotments, although it had refused so recently

as the middle of December to take this step. Notwithstanding the increased movement of Coal, it is not believed that the demand will be adequately supplied for a long time. Not only is the car famine expected to be renewed soon, but the mines are hampered by the lack of a sufficient force of miners. It is almost impossible to get good miners now anywhere in Germany, and, besides this, many of the mines have had to detach a considerable part of their working force to assist in putting down new shafts or making other improvements.

Reports from the Belgian Coal and Iron industry indicate much the same conditions as prevail in Germany. Both industries are producing under high pressure and prices are tending strongly upward. The price of Coke there has just been raised 3 francs, making the price 23 francs for ordinary and 26 for half washed. A curious and significant fact is that the Belgian Pig Iron combination has just been broken up owing to the scarcity of Iron.

New York.

NEW YORK, January 31, 1906.

Pig Iron.—Some good orders have been placed during the past week, and so far as Foundry Irons are concerned the market is firm. Southern makers are selling at $14 for No. 2 at Birmingham, for round lots for forward delivery, but it must be noted that the advance in freights of 25c. per ton after March 1 makes the delivered price so much higher. Among recent sales are 8000 tons to a railway equipment company in the northern part of the State close to 4000 tons of Forge Iron to a puddling mill in the Albany district, and 12,000 tons of Malleable Iron. In eastern Pennsylvania Steel plants have taken 25,000 tons of Basic in the aggregate for forward delivery. There is a good deal of pressure to bring forward Basic Pig previously bought, and some buying of spot and misfit Basic. The Pipe interests have taken some round lots during the week. We quote: Northern Iron, No. 1 Foundry, $19 to $19.25; No. 2 Foundry, $18.50 to $18.75, and No. 2 Plain, $18.25 to $18.50. Southern Iron is selling at $18.50 to $19 for No. 1 Foundry, and $18 to $18.50 for No. 2 Foundry. There has been some pressure to sell warrants, which have changed hands as low as $13.35.

Steel Rails.—The rail business closed in the week amounts to about 80,000 tons, the principal order being for 28,000 tons for the New York, New Haven & Hartford. The Southern Pacific has bought 10,000 tons more, bringing the total for the Harriman lines well above 200,000 tons. Trolley lines are bringing an unusual tonnage to the mills, an important contract of the week being for 12,000 tons for the Pacific Electric Railway, the trolley system centering in Los Angeles which is controlled by Huntington interests. The Central Illinois Construction Company bought 8000 tons last week for an Illinois trolley system; the Atlantic City Railroad took 5000 tons and 3800 tons were bought for an electric line in Utah. A number of scattering orders are reported, for lots ranging from 500 to 1500 tons.

Structural Material.—It is probable that at no time have so many buildings involving Steel construction been projected throughout the country as are now under consideration. In New York alone plans have been made for buildings that will require 200,000 tons of Steel. Much the larger part of this will be placed for erection in the coming season unless there should be a serious interruption of such plans by conditions now unlooked for. The American Bridge Company has just taken a contract for 9000 tons of Steel to enter into the construction of an enormous saw mill in the hard pine belt of the South. The intention of the builders is to erect the mill at a given place, and later to take down the Steel and reconstruct it at other points as the working up of their hard pine progresses. The American Bridge Company also has the Steel construction for the new Bank of California and an adjoining building in San Francisco, the latter for the California Title Insurance & Trust Company. The bank building will be of a single story with dome, and will require about 500 tons of Steel. The adjoining building is 14 stories and will take 1500 tons. A number of important projects are pending in New Orleans, aggregating about 25,000 tons of Steel. In other cities a large tonnage is involved in the buildings which are expected to go up this spring. In New York City the general contract for the building which is to replace the Brunswick Hotel is in the hands of Charles T. Wills. For the last two or three years this project has been under consideration, and at one time it was expected a hotel would go up on this site, but it is now the plan to erect a loft building, calling for 5000 to 6000 tons of Steel. In the past week the Passaic Steel Company, Paterson, N. J., has taken the contract for the Structural Steel for the New York Club, Fifth avenue and Thirty-fifth street, for which Wells Brothers Company is general contractor. There was some good general buying of Structural Steel in this market, one contract of the week involving from 15,000 to 18,000 tons, largely for delivery in the first half of the year. Plans have been filed in the past week for the terminal station of the Pennsylvania Railroad, to be built on the blocks bounded by Seventh and Eighth avenues and Thirty-first and Thirty-third streets. The building is to be 433.4 feet wide on the avenue and 771.6 feet long on the streets. The central part, the main waiting room, will be 155 feet high with an arched dome; the main section will be 65 feet high. The estimated cost is $4,000,000. The Steel was awarded some time ago. We quote as follows for tidewater delivery on shipments from mill: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inch, 0.10c. extra; Angles over 6 inches, 0.10c. extra. Out of stock Beams and Channels are sold at 2.50c., though German Shapes can be had in small lots at considerably less. On direct shipments from German mills 1.80c., duty paid, is still asked, but German makers are now quite fully booked for the first half of the year. Simultaneously with the recent advance from 1.40c. to 1.60c., Pittsburgh, in the base price of Plates for Pacific Coast delivery, a similar advance was made in Structural Steel to the Pacific Coast, which is now also 1.60c., Pittsburgh.

Bars.—Manufacturers report new business still rather quiet, but the mills very busy on old contracts on which specifications are coming in satisfactorily. Quotations are maintained at 1.84½c. to 1.95c., tidewater, for Bar Iron for prompt delivery, and 1.64½c. to 2c., tidewater, according to delivery desired, for Steel Bars.

Plates.—Local sellers of Plates report trade rather quiet, although some little shipyard work is coming up. No large tonnage is involved in any of the business now in sight. Quotations are continued as follows at tidewater: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

Cast Iron Pipe.—The foundries are not only well employed on old orders, but new business continues to flow in at a remarkable rate for midwinter. As far as can be ascertained no large orders are coming up in the near future. The local municipal letting expected for some time is still held back. Carload lots are firmly maintained at $29.75 per net ton for 6-inch at tidewater.

Old Material.—Cast Scrap, Old Car Wheels, Cast Borings and Wrought Turnings are very strong. Good quantities of Cast Scrap are under negotiation, with buyers making offers very close to maximum quotations. Some inquiry is noted for Steel Scrap, but not for large lots. In a general way the demand for Old Material has slackened considerably. The mills are cutting down purchases, but they are so busy that it is believed that they can all use about as much as they have accepted, so that no accumulations will be carried over to spring. The very mild weather continues to bring out plenty of stock, but a good feature of the market is that the heavy stocks are all carried by big dealers, who are abundantly able to wait until an improvement takes place in the demand. The feeling throughout the trade is cheerful and it is believed that the outlook promises an improvement before many weeks. Some dealers, in fact, are expecting a strong buying movement in February, in view of the very small demand from consumers in December and January. Prices on Steel Scrap, Wrought Scrap and Rolling Mill Material generally are not as strong as they have been, and it is possible that our quotations can be shaded 50c. per ton. Approximate prices per gross ton, New York or vicinity, are as follows:

Old Iron Rails	$22.50 to $23.50
Relaying Rails	25.00 to 26.00
Old Steel Rails, rerolling lengths	16.50 to 17.00
Old Steel Rails, short pieces	16.00 to 17.00
Heavy Melting Steel Scrap	16.00 to 17.00
Standard Hammered Iron Car Axles	26.00 to 27.00
Old Steel Car Axles	21.00 to 22.00
No. 1 Railroad Wrought	21.50 to 22.00
Iron Track Scrap	18.50 to 19.25
No. 1 Yard Wrought, long	19.50 to 20.50
No. 1 Yard Wrought, short	17.50 to 18.50
Wrought Pipe	14.75 to 15.25
Light Iron	11.50 to 12.00
Cast Borings	9.25 to 9.50
Wrought Turnings	13.00 to 13.50
Old Car Wheels	18.50 to 19.00
No. 1 Machinery Cast	15.00 to 15.50
Stove Plate	12.50 to 13.00
Malleable Cast	16.00 to 16.50

Metal Market.

NEW YORK, January 31, 1906.

Pig Tin.—There has been a fair amount of activity during the week under review, and prices have been maintained on an even basis ranging from 36.50c. to 36.25c., and back to 36.50c. On Monday of this week there was a very good business transacted, amounting probably to 125 tons. The Tin Plate manufacturers have bought largely, and the leading interest has been an especially large purchaser during the month. Spot stocks continue scarce, but it is believed that this condition will be but temporary, as there have been 4300 tons imported this month, and there are afloat for American ports 3620 tons. Of the latter 1450 tons will

probably be available by the 5th. The large arrivals this month as well as the unusually heavy shipments from the Straits will not result in the accumulation of much metal in this country, as deliveries into consumption are estimated at between 3800 and 4000 tons. The Tin, which is to arrive early next week, however, will at least temporarily relieve the stringency. The belief is expressed in some quarters that after these heavy arrivals there will be a temporary recession in the American market. The London market closes firm to-day at £165 for spot and £165 7s. 6d. for futures. Tin is held here at 36.75c. The regular Banka sale was held January 25, and went at an average of 101½ florins, equivalent to 37.20c., c.i.f. New York.

Copper.—The market is very dull and there is practically no business on which to base quotations. Sellers are quoting future deliveries of Lake and Electrolytic at 18.12½c. and future deliveries of casting grades at 17¾c. to 18c. For strictly spot stocks premiums above these prices would probably have to be paid. The larger interests are well supplied with metal for the next six or eight weeks and there will have to be a heavy demand from Europe, or some unusual turn of events in this country, to have them re-enter the market at the present level. A bona fide order for a round lot of Copper at concessions from the above quotations would probably be accepted in some quarters. The London market is practically unchanged from last week, spot selling at £78 10s, futures at £77 and Best Selected at £84 5s. There is practically no Eureopean demand. Exports during the first 30 days of January, exclusive of Southern and Pacific ports, aggregated 14,494 tons. This indicates that the total exports for the month will not be much over 15,000 tons.

Pig Lead.—There has been an apparent halt in the downward trend of the market, and prices in New York and St. Louis are practically unchanged from last week. In New York 50-ton lots are quoted at 5.75c. The American Smelting & Refining Company continues to quote shipment Lead in 50-ton lots at 5.60c., but orders are only taken at the price current on date of shipment. The St. Louis market is reported as barely steady at 5.55c. In London prices are again lower, and £16 5s. is quoted.

Spelter.—The consumers of special or brass mill Spelter are apparently well supplied with stock for the next month or six weeks and at present are out of the market for future deliveries. Prices are considerably lower and spot stocks of Prime Western in New York are quoted at 6.15c. to 6.25c. In St. Louis the market is dull and weak, with sellers at 6c. The London market is also lower, at £27 12s 6d.

Aluminum.—There is a fairly active demand for aluminum and the principal producer is from one to two months behind in filling orders. No. 1 Ingots for remelting are offered at 35c. per pound in ton lots; No. 2 Ingots at 33c.

Antimony.—There has been no change since our last report. The market is very dull. Cookson's and Hallett's are quoted at 14.25c. to 14.50c.; other grades at 13.75c. to 14.50c.

Tin Plate.—The production of Tin Plate at the present time is enormous, the leading interest working nearly up to its full capacity. Operations are only limited by the shortage in the supply of Black Plate. As far as new business is concerned, there is nothing to offer, as the larger jobbers covered their requirements before the advance in price. Specifications on contracts are coming in freely. In New York 100-lb. 14 x 20 IC Coke Plates are held at $3.69, in Pittsburgh $3.50. The London market is 1½d. lower, at 12s. 9d.

Old Metals.—There is a fair demand for Copper and Brass, but Lead Scrap is rather dull. There are good sized stocks of Heavy Machinery Composition and Brass Turnings. For New York deliveries we revise quotations as follows:

	Cents.
Copper, Heavy Cut and Crucible	17.75 to 18.00
Copper, Heavy and Wire	17.25 to 17.75
Copper, Light and Bottoms	15.50 to 15.75
Brass, Heavy	12.00 to 12.25
Brass, Light	10.25 to 10.50
Clean Brass Turnings	10.50 to 10.75
Composition Turnings	13.25 to 13.75
Heavy Machinery Composition	15.50 to 16.00
Lead, Heavy	5.25 to 5.35
Lead, Tea	5.15 to 5.25
Zinc, Scrap	4.85 to 5.10
Aluminum Scrap	20.00 to 25.00

The Champion Rivet Company, Cleveland, Ohio, has purchased a tract of 25 acres of land on the Erie Railroad, Cleveland, and is preparing plans for factory buildings of the most modern design, to be erected during the coming spring. This factory will be equipped with machinery which ten years of experience has taught the company's managers to be the best suited to their work. The new plant will include ten additional machines to those now in operation, and the output will be increased from 100 tons to 200 tons per day. When finished this will be the largest exclusive plant for the manufacture of rivets in the world. Rivets ½ inch in diameter and larger are the company's specialty. The product has increased from one ton per day in 1895 to 100 tons per day at present.

Iron and Industrial Stocks.

NEW YORK, January 31, 1906.

For the greater part of the past week the iron and steel stocks were very firm, with indications of a higher range of values being attained, especially on the United States Steel stocks and the railroad equipment stocks. The highest prices realized for the week on the most active stocks were as follows: United States Steel preferred 113, common 45¼; Car & Foundry common 47¼; Locomotive common 76¾; Pressed Steel common 63¼; Colorado Fuel 83⅝; Tennessee Coal 159. All suffered on Monday when a special drive was made at stock values by the introduction of a bill in the House of Representatives at Washington proposing to investigate the operations of the Pennsylvania Railroad Company in acquiring the stock of other railroad companies. The active iron and steel stocks in some cases were driven down as much as $4 to $5 per share under the highest prices of Saturday. Further declines were made on Tuesday. Colorado Fuel was the hardest hit, falling to 65. Apparently, something interesting is pending in Cambria Steel. This stock has been very active of late in Philadelphia, heavy purchases being made at high prices. Last transactions in active stocks up to 1.30 p. m. to-day are reported at the following prices: Can common 10¾, preferred 71; Car & Foundry common 45, preferred 103; Locomotive common 75; Steel Foundries common 13¾, prefered 50¾; Colorado Fuel 72⅛; Pressed Steel common 61¾, preferred 104; Railway Spring common 60½; Republic common 34¾, preferred 107; Sloss-Sheffield common 88; Tennessee Coal 155½; United States Cast Iron Pipe common 49⅛, preferred 95½; United States Steel common 44⅝, preferred 111⅝.

Dividends.—Jefferson & Clearfield Iron Company, Clearfield, Pa., has declared a dividend of 2½ per cent. on the preferred stock.

Pressed Steel Car Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable February 23.

American Radiator Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable February 15, and the regular quarterly dividend of 1 per cent. on the common stock, payable March 31.

United States Steel Corporation has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable February 28.

At the annual meeting last week of the Standard Sanitary Mfg. Company, Pittsburgh, Pa., the regular quarterly dividend of 1¾ per cent. on the preferred stock, a dividend of 4 per cent. on the common stock, payable 1 per cent. quarterly, and an extra dividend of 2 per cent. on the common stock were declared. The company reports that business during the past year was very satisfactory.

Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, has declared a dividend of 1 per cent., payable February 1, and a second dividend of 1 per cent., payable May 1.

New York Metal Trades Association.—The New York Metal Trades Association at a special meeting held January 25 adopted a resolution providing for amalgamation with the National Metal Trades Association. After March 1 it will be known as the New York Branch of the National Metal Trades Association. Henry C. Hunter, who was re-elected secretary of the Association, will be deputy commissioner of the National association. About 168,000 men are employed in shops represented in the New York Association. M. K. Bowman, of James Riley Repair & Supply Company, New York, was elected president for the coming year; W. H. Harrison, Consolidated Iron Works, Hoboken, N. J., vice-president, and Christopher Cunningham, Novelty Boiler Works, Brooklyn, treasurer. These officers are *ex officio* members of the Executive Committee, which in addition, is composed of the following: H. N. Covell, Lidgerwood Mfg. Company, Brooklyn; Andrew Fletcher, Jr., W. & A. Fletcher Company, Hoboken, N. J.; Robert S. Wyatt, Greenlie, Wyatt & Co., New York; George Q. Palmer, Quintard Iron Works, New York; Charles H. Smith, Theodore Smith & Sons Company, Jersey City, N. J.; M. P. Davidson, Burlee Dry Dock Company, Staten Island; Gilbert M. Edgett, Brooklyn.

The new blast furnace which the Illinois Steel Company is building is expected to blow in during May.

The Steel Corporation's Quarterly Statement.

The quarterly statement of the United States Steel Corporation for the three months ended December 31 last reports the net earnings $35,278,688. The unfilled orders on hand at the end of the year aggregated 7,605,086 tons. Both the net earnings and the tonnage were in excess of the semiofficial estimates heretofore given out. According to this, the total net earnings for the fiscal year, which ends with the calendar year, are $119,850,282.

The net earnings by months were as follows: October, $12,400,306; November, $11,827,215, and December, $11,051,167. This latter figure may be changed slightly when the audits for the year are completed, but it is approximately correct. It was but natural that the net earnings for the last month of the year should be smaller than those of the two months preceding it, climatic and other reasons accounting for it. The total net earnings are arrived at after deducting for each month the expenditures for ordinary repairs, renewals and maintenance of plants, employees' bonus funds, and also interest on bonds and fixed charges of the various subsidiary companies. The quarterly statement makes the following showing:

Net earnings		$35,278,688
Less appropriations for the following purposes—viz.:		
Sinking funds on bonds of subsidiary companies	$435,056	
Depreciation and reserve funds	5,185,187	
		5,620,243
Balance of net earnings		$29,658,445
Deduct:		
Interest for the quarter on U. S. Steel Corporation bonds outstanding	$5,743,528	
Sinking funds for the quarter on U. S. Steel Corporation bonds—viz.:		
Installments	$1,012,500	
Interest on bonds in sinking funds	180,935	
	1,193,435	
		6,936,963
Balance		$22,721,482
Dividend for quarter on preferred stock, 1¾ per cent.		6,304,919
Surplus for the quarter		$16,416,563
Less appropriated from surplus for the following purposes—viz.:		
Expenditures made and to be made on authorized appropriations for additional property, construction and discharge of capital obligations	$4,000,000	
Specifically set aside for contemplated appropriations and expenditures	5,000,000	
		9,000,000
Balance of surplus for the quarter		$7,416,563

At the close of 1904 the current assets of the Steel Corporation aggregated $202,608,740, and current liabilities $39,838,254, leaving the actual working capital at $162,770,486. The working capital at the end of 1905 shows up much more favorably than a year ago, the result of an increase in net earnings of $46,673,761 over 1904.

On December 31, 1904, the surplus of the Steel Corporation stood at $61,365,445: with the addition of the surplus for 1905—$17,233,264—it was $78,598,709. The cash and sundry marketable stocks and bonds of the corporation at the present time will total nearly $100,000,000. Gross sales and earnings for 1905 aggregate $600,000,000, as compared with $444,405,000 in 1904. The net earnings of the Steel Corporation for the last three years, compared monthly and quarterly, are as follows:

	1905.	1904.	1903.
January	$6,810,847	$2,868,213	$7,425,775
February	6,629,463	4,540,673	7,730,361
March	9,585,586	6,036,346	9,912,571
First quarter	$23,025,896	$13,445,232	$25,068,707
April	$9,037,925	$6,863,833	$10,905,204
May	10,602,187	6,256,518	12,744,324
June	10,665,004	6,370,374	12,992,780
Second quarter	$30,305,116	$19,490,725	$36,642,308
July	$9,035,168	$6,344,771	$12,384,647
August	10,986,901	6,202,957	10,918,174
September	11,218,513	6,226,204	9,120,134
Third quarter	$31,240,582	$18,773,932	$32,422,955
October	$12,400,306	$7,250,204	$7,675,141
November	11,827,215	7,117,418	4,069,901
December	11,051,167	7,009,011	3,292,140
Fourth quarter	$35,278,688	$21,466,633	$15,037,182
Year	$119,850,282	$73,176,522	$109,271,152

The banner year for the corporation was 1902, when the total net earnings were $133,308,763. The earnings by quarters were then as follows: First, $26,715,457; second, $37,662,058; third, $36,945,489; fourth, $31,985,759. It will therefore be seen that the last quarter of 1905, so far as net earnings are concerned, was surpassed by the figures for the second and third quarters of 1902, but by those of no other quarter in the history of the organization.

Since the Steel Corporation was formed it has spent about $100,000,000 in new construction and the acquisition of additional property, with practically no increase in fixed charges or dividends; with the exception of guaranteeing $45,000,000 of Union Steel Company's bonds it has assumed no new burdens, but as this company is earning $6,000,000 a year, this cannot be called a burden; it has expended $50,000,000 for extraordinary replacements and nearly $100,000,000 for ordinary maintenance and repairs, while the cost of production has been cut down at least $2 a ton, which means a saving of approximately $20,000,000; the capacity of the plants has been increased from 25,000 tons of finished and semifinished steel a day to 35,000 tons daily, or over 3,000,000 tons for the year, the corporation's earning power being increased $21,000,000 from this source alone. In short, the corporation has increased its earning capacity about $41,000,000 in something more than four years.

Labor Notes.

The Housesmiths' and Bridgemen's Union of New York, which has been conducting a strike against Post & McCord and has refused arbitration, has been agitating among the other building trades unions in New York City for a breaking off of the agreement between the latter and the employers' association. The strike of the Housesmiths' Union has been discountenanced by the other unions which are parties to the arbitration agreement, but some of the rank and file of these unions now object to working with non-union men. The Housesmiths' Union brings to the other unions the question whether they will see the Housesmiths' Union wiped out, or by combining in a strike in violation of their agreement make common cause with the strikers. The matter has been brought up before the Central Federated Union and a meeting of its general executive board will be held on Friday night, February 2, when affiliated unions of the building trades will be asked to declare themselves. It has been decided to ask President Gompers of the American Federation of Labor to call a meeting of its executive committee in New York at once to take hold of the building trades situation and to issue a general appeal for aid for the housesmiths. Meantime eight unions in the building trades, headed by the bricklayers, have made an appeal to the general arbitration board of the employers and the unions to call a special meeting to end the trouble with the Housesmiths' Union. The proposal of these unions is that the housesmiths return to work pending arbitration, waiving their contention that Post & McCord are allied with the American Bridge Company and that the employers reconsider their decision to establish an open shop in the housesmiths' trade.

It is reported that all the foundries of members of the National Founders' Association involved in the Philadelphia Molders' and Coremakers' strike are in operation, turning out varying percentages of their regular output. One foundry has reached 90 per cent. of its output previous to the strike. Molding machines are being introduced as rapidly as they can be delivered. It is stated that thus far between 20 and 30 of the strikers have withdrawn from the union and returned to work.

An effort is being made in New York City to reorganize all the old lodges of the Brotherhood of Boiler Makers and Iron Ship Builders.

The Machinery Trade.

NEW YORK, January 31, 1906.

The only important development in the machinery trade the past week was the receipt of extensive inquiries for rolling mill and power equipment from the leading steel interest. The steel industry is at the present time being followed very closely by machinery merchants, in view of the important developments likely to occur very shortly. We understand that at least two other steel companies will soon come into the market for large quantities of machinery.

A New York machinery merchant who went to England to establish business connections returned from London last week, after arranging for a number of agencies throughout Great Britain. Although his mission was of more or less a confidential one in regard to his own line, he stated in discussing machinery conditions on the other side that English manufacturers are taking to the use of American machinery and are disposed to regard trade with this country favorably in comparison with German competition. He declared that he could have sold a considerable quantity of machine tools of various makes to consumers who discussed those subjects with him, but he found on communicating with manufacturers in this country that he could get no positive terms as to delivery in most of the lines inquired for. He gave it as his opinion that in case of a let up in trade in this country manufacturers will find an easy market in Europe and especially in England. The tendency to build light machinery here has met with approval in England, and on that account the machine products of this country are greatly preferred to those of Germany. Another thing that the visitor particularly noticed was the fact that in many of the large machine shops and factories American mechanics and mechanical engineers held positions of importance. He was told that many English manufacturers give preference to American labor, and a mechanical man with executive ability can invariably command a position with large establishments. He noticed particularly that Americans were employed as shop foremen and superintendents in plants where electric machinery and equipment was made, and the English show a general desire to adopt American methods in both manufacturing and marketing products.

The Niagara Frontier Purchasing Agents' Association at its meeting on January 18 received a number of new members, and M. L. Cramer of the Snow Steam Pump Works, secretary-treasurer of the association, has a large number of applications on file to be acted upon at subsequent meetings. A paper on "Refractories and Fire Brick," extracts from which are given in another column, was read by William A. Stanton of New York. The following new members attended the meeting: H. B. Bodine, National Atchinson Graphite Company, Niagara Falls, N. Y.; Wm. M. Grosvenor, Geo. F. Wescott Company, Buffalo; E. J. McGraith, Western Block Company, Lockport, N. Y.; C. G. Sutliff, Westermann & Co., Lockport, N. Y.; W. H. Spear, Castner Electrolytic Alkali Company, Niagara Falls, N. Y.; Henry F. Russell, Lumen Bearing Company, Buffalo; H. G. Walker, H. G. Trout Foundry, Buffalo; S. H. Brownlee, Ontario Power Company, Niagara Falls, N. Y.; G. S. Streeter, Force Food Company, Buffalo; H. G. Bush, Cary Safe Company, Buffalo; Joseph Campbell, Diamond Saw & Stamp Company, Buffalo; W. H. Lawrence, United States Hame Company, Buffalo; Frank S. Porter, Howard Iron Works, Buffalo; C. D. Filstead, John R. Keim Company, Buffalo. The next meeting of the association will be held in February, at Niagara Falls, and at that time the association expects to hear a lecture by an expert who will take as his subject, "Combustion of Coal."

Milan Exposition.

American machinery will have a good showing in the exposition arranged to celebrate the completion of the Simplon tunnel, which will be opened at Milan, Italy, some time in April, and will extend to next November. The exposition will deal particularly with methods of transportation by land and air, transportation by water, machinery, provident institutions and decorative art. The machinery exhibit will in all probability be larger than any that has been given in connection with recent national expositions, and a large number of American maufacturers have already sigified their intention of showing their products. This country has not yet decided just how it will participate, but a measure is pending before Congress providing such action. At the Italian Chamber of Commerce, 35 Broadway, New York, applications and inquiries are being received from American manufacturers, and the following companies have signified their intention of joining the American exhibit: Olds Motor Works, Lansing, Mich.; Oliver Chilled Plow Works, South Bend, Ind.; Pratt & Whitney Company, Hartford, Conn.; New York Leather Belting Company, New York; National Cash Register Company, Dayton, Ohio; Prentiss Bros. Company, Worcester, Mass.; Reo Motor Car Company, Lansing, Mich., Schaeffer & Budenburg Mfg. Company, Brooklyn, N. Y.; Sharpless Separator Company, Westchester, Pa.; L. S. Starrett Company, Athol, Mass.; Sterling Emery Wheel Company, Tiffen, Ohio; Stover Mfg. Company, Freeport, Ind.; B. F. Sturtevant Company, Boston, Mass.; United States Shoe Machinery Company, Boston, Mass.; Vermont Farm Machine Company, Bellows Falls, Vt.; Walter Bushnell & Glessner Company, Chicago, Ill.; Westinghouse Machine Company, Pittsburgh, Pa.; Acme Machinery Company, Cleveland, Ohio; American Clay Working Machinery Company, Bucyrus, Ohio; Aurora Automatic Machinery Company, Aurora, Ill.; Baldwin Locomotive Works, Philadelphia, Pa.; J. G. Brill Company, Philadelphia, Pa.; Brown & Sharpe Mfg. Company, Providence, R. I.; Chicago Pneumatic Tool Company, Chicago, Ill.; Cincinnati Milling Machine Company, Cincinnati, Ohio; Cincinnati Shaper Company, Cincinnati, Ohio; Collins Plow Company, Quincy, Ill.; Deering Harvester Company, Chicago, Ill.; Fairbanks, Morse & Co., Chicago, Ill.; Foster Engineering Company, Newark, N. J.; H. H. Franklin Mfg. Company, Syracuse, N. Y.; Gisholt Machine Company, Madison, Wis.; Hendey Machine Company, Torrington, Conn.; Hill, Clark & Co., Boston, Mass.; Johnson Harvester Company, Batavia, N. Y.; Lozier Motor Company, New York; McCormick Works, Chicago, Ill.; Morse Twist Drill Company, New Bedford, Mass.

The New York branch of the Alfred H. Schutte Company has gathered together a large number of American machine tools for exhibition at the exposition. The company has 150 square meters of space and its branch office at Milan will have charge of placing the exhibit, which will consist of a complete line of machine tools handled by that concern. More than twenty large manufacturers will be represented at the exposition and most of the machines will be shown in operation. This company had a successful exhibit at the Liegé Exposition and almost before the show was over most of the machinery there was sold. The company has a branch office at Turin, Italy, and its office there will co-operate with the Milan representatives. T. H. Marburg, who is in charge of the New York office, is getting the exhibit together, and he has arranged to show machinery manufactured by Cincinnati Milling Machine Company, Bickford Drill & Tool Company, G. A. Gray Company, Cincinnati, a number of various automatics which the company represents; Prentiss Bros. Company, Hendey Machine Company, Landis Tool Company, Baker Bros., Toledo, and a number of others. Most of the machines will be shown in operation and they will be equipped with all the special tools they are capable of using. The date for the opening of the exposition has not been arranged as yet, and it is expected that the entire Schutte exhibit, which will be the largest American display, will be in shape by April 10 at least. The Milan exhibition will be made particularly attractive to American manufacturers of electric machinery and appliances, as an agreement has been made between the Italian manufacturers on those lines and those of other European countries not to enter into each other's field. This arrangement augurs well for an American invasion and it is being taken advantage of by manufacturers here. There has been some difficulty in getting machinery ready for the exposition because of the rush of business in this country, but most of those who are to show goods have their exhibits well under way by this time, and at least a month after the exposition opens it is expected that the American exhibition will be in good shape. The success attained by American manufacturers in the Liegé Exposition has resulted in considerable competition for the Milan show and manufacturers are beginning to realize more and more the advantage of displaying their products in the foreign market under the auspices of an exposition of this kind.

Large Steel Mill Requirements.

The United States Steel Corporation has inquiries in the market for machinery for Sharon, Pa., and the indications are that the buying for other extensive improvements, noted in *The Iron Age* of January 11, will shortly begin. Some people in the trade have received inquiries for heavy power and mill machinery, and the total of the requirements already indicated to the trade will reach a high figure. As yet the company has not taken up the question of equipment for its proposed machine shop extensions. As far as known in the trade, machine tool houses are assured of a good share of patronage when the big additions now contemplated are on in earnest—in fact the buying to be done by the corporation will probably exceed that of several years past. Some time ago it was mentioned in these columns that the United States Steel Corporation would undoubtedly have to make some extensive improvements to its various plants. The carrying out of the projects outlined by the organization will mean enormous expenditures and will benefit every branch in the machinery trade, as the improvements include power additions, rolling mills, blast furnaces and machine shops. The company also contemplates additions to its ore handling machinery at various points, as well as new coal and ash handling plants, condensing plants and the like. Many of these improvements are to be under way shortly if the inquiries that have been made along those lines can be taken as any indication. So far the company has shown a disposition to receive bids from all sources for the heavy work it now has on hand and that is taken by machinery men as an assur-

ance that every one in the trade who desires it can get a chance in the bidding.

The Bethlehem Steel Corporation is having plans prepared for a big addition to be made to its Bethlehem plant in order to carry out the plans of Charles M. Schwab to introduce a new branch of steel construction work. It is understood that some special machinery will be required to produce the class of material that the company expects to put out. Mr. Schwab on the occasion of his last trip to Europe purchased American patent rights for producing new forms of structural steel. It is claimed that by the new process steel girders that are now formed of three pieces can be produced in one piece, and it is the intention of the company to go very largely into the manufacture of that form of material. A number of rolling mill people have been called upon for information as to price and design for heavy equipment for this sort of work, and it is understood that plans and specifications are being prepared and they will be put before the trade within a very short time.

Plans and specifications are being prepared by Milliken Bros., 11 Broadway, New York, for a slip and float bridge to be built in connection with the company's water front open hearth steel plant and rolling mills on Staten Island. The float will be constructed so that the largest railroad car carrying floats can be accommodated, and this will enable all railroads entering New York Harbor to deliver cars at the steel plant tracks without the necessity of loading and unloading the freight into lighters. The float and bridge will be modern in every way, even to the construction of a bulkhead of concrete instead of timber material, and the slip will be wider than a single float in order to accommodate lighters. An unusually large electric traveling crane will pass directly over both the float and the lighter in order to enable lighters to be loaded by overhead traveling cranes. The works at Staten Island are within the lighterage limits and consequently all the railroads entering the harbor will have terminal facilities at the plant. Contracts have not been let as yet for conveying machinery and cranes, but it is expected that this will be done shortly, as all the work at the plant is being hurried to completion.

Other Machinery Requirements.

The Pennsylvania Railroad is preparing plans for improvements at Morrisville, N. J., which are to include the erection of new shops. The company has just filed plans with the Building Department for its station in New York, the estimated cost of which is $4,000,000. The building is to be 433 feet wide, 771 feet long and the central part, occupied by the main waiting room, will be 150 feet high. The main section will be 65 feet high. President Cassatt last week made public the plans of the company for the establishment of large terminals and yards in the vicinity of New York. The plans include the establishment of a great terminal between Jackson and Thompson avenues, in Long Island City, which is to be upward of a mile long and to average nearly one-third of a mile wide. This yard will contain about 400 acres. The sites and areas of the other new yards are as follows: Freight terminal at Bay Ridge, between Sixty-fourth and Sixty-fifth streets, extending from Fourth avenue to the bay, 790 lots; delivery yards at Fifth avenue and Sixty-fifth street, Bay Ridge, 35 lots; delivery yard at Fifteenth avenue and Sixtieth street, Bath Junction, 44 lots; delivery yard at Gravesend avenue, 98 lots; delivery yard at Manhattan Beach Junction, East Sixteenth street and Avenue I, 150 lots; delivery yard at Vanderveer Park, Flatbush avenue, 90 lots; delivery yard near Canarsie, 95 lots; delivery yard at Rockaway avenue, 80 lots; freight terminal at East New York, 566 lots; delivery yard at Bushwick Junction, 96 lots; new freight terminal at Third street and Hunters Point avenue, and delivery yard north of the avenue, 109 lots. In connection with these improvements are the enlargement of the freight terminal yards at Flatbush avenue and Barick avenue, Bushwick, terminal at Sheepshead Bay, and improvements on the north side of Newtown Creek, between Van Alst avenue and Pearsall street.

The Great Northern Railroad has filed plans for new shops at St. Paul, Minn., to be erected on property owned by the company between Jackson and Rice streets. The new buildings will be two stories and about 200 feet square.

The improvements to be made at Waycross, Ga., by the Atlantic Coast Line, will include the erection of a machine and erecting shop, blacksmith shop, coach shop, paint shop, planing mill, foundry, round house, store house and other smaller structures.

It is stated that the Canadian Pacific Railroad is planning the substitution of electricity for steam as a motive power. After the company finally decides upon the change it is probable that the Montreal-Quebec section will be equipped as an experiment, and should it prove successful, it is the intention to gradually convert a good part of the line into an electric road.

The West Jersey & Sea Shore Railroad is going ahead with the electrification of its line between Camden and Atlantic City, N. J., and it is expected that a second appropriation will be made by the directors within a few months to cover the purchase of additional apparatus for extending the work, plans for which are now in the hands of the engineers for consideration.

The Chicago Pneumatic Tool Company, New York, has so oversold its capacity, particularly in the compressor and drill departments, that it has decided to re-open its plant at Olney, Pa., just outside of Philadelphia, which it will devote principally to the manufacture of the smaller air compressors and other machinery. This plant has been closed since the company was organized, but has never been dismantled and is now fully equipped, so that the company will have an increased capacity immediately. The plans for the enlarging of the compressor works at Franklin, Pa., are maturing, and it will be but a short time before actual work will be started. With this increased capacity the company hopes to be able to cope with the increasing demand for its compressors and drills. The company has just received an order from the William Cramp Ship & Engine Building Company, Philadelphia, Pa., for a 2000-foot compressor and one from the Lake Shore Railroad for a 1200-foot compressor, to be installed in the shops at Lima, Ohio.

Machinery is now being purchased by the Butler Bros. Construction Company, New York, to be used in the construction of the Grand Central Station, on Forty-second street. Purchases thus far made include two 1000-foot air compressors from the Chicago Pneumatic Tool Company, New York, and Sullivan rock drills. We understand that there is considerable more in the way of machinery that has not yet been secured.

The recently organized Michigan Copper & Brass Company, Detroit, Mich., has completed its organization and will now go ahead with its plans for the construction of its plant. It will be remembered that this company is to build a large plant on a 12-acre site which it recently purchased. The following officers and directors were elected at the meeting held last week: George H. Barbour, president; F. P. Moran, vice-president and temporary secretary; N. D. Carpenter, temporary treasurer; Jeremiah Howe, superintendent; Henry B. Ledyard, M. J. Murphy, B. M. Ireland, Fred H. Alger and James E. Danaher. A building committee composed of D. M. Ireland, chairman, H. B. Ledyard and Jeremiah Howe was appointed to take charge of the plans for the erection of buildings and to secure the necessary machinery.

A consolidation of the Sturgess Governor Engineering Company with the Ludlow Valve Mfg. Company has been effected with the object of improving the manufacturing facilities of the former and introducing more extensively its well-known specialties. The Ludlow Valve Mfg. Company will manufacture the Sturgess governors in a portion of the recently built additions to its plant at Troy, N. Y., and this department will be equipped with the best tools and appliances for producing high class and accurate work. The work will be carried on by the same management as heretofore.

Catalogues Wanted.—Gustave Voigtman, Haiger, Nassau, Germany, desires catalogues from manufacturers of molding machines, special machinery and builders of agricultural machinery and implements, and novelties in agricultural machinery and implements.

The New Orleans Roofing & Metal Works, New Orleans, La., manufacturer of blow piping systems and dust collectors, desires catalogues and price-lists from manufacturers of railroad material used in the construction of a narrow gauge railroad, such as is used in warehouses, &c., for the handling of trucks.

Philadelphia Machinery Market.

PHILADELPHIA, PA., January 30, 1906.

Business during the month of January has been generally satisfactory. The first month of the year rarely develops any great spurt in the demand, as purchasers of machine tools and machinery are occupied to a considerable extent with stock taking and with the outlining of their policy for the year. Under these circumstances the purchase of equipment is frequently delayed for some little time, particularly where the requirements are extensive. Most of the business placed during the month has been for small lots of tools, the tendency being toward those of the heavier types, and while large specifications have been notable for their absence the volume of smaller ones aggregated a very satisfactory total.

Builders of all classes of tools have their order books well filled and the continual influx of new business makes it impossible to catch up on deliveries to any extent. In some instances where manufacturers have taken on an unusual amount of business deliveries have materially hardened.

The railroads are still out of the market, except for small scattering orders for immediate requirements. It is expected that some good business will develop from this source of trade, but it is not anticipated that specifications will be out before early spring.

Inquiries for all classes of machinery and tools have been well maintained. In most cases they lead up to business promptly, as buyers realize the uselessness of feeling the market to any great extent in view of the present condition of prices and deliveries.

Export trade has a slightly better appearance, but is somewhat spotty. There has been a better demand for molding machines and some other specialties, but that for the general run of machine tools remains unchanged.

The demand for the smaller engines, boilers and second-hand machine tools has not been particularly active, the conditions governing the general trade being largely applicable in these branches, although the inability to obtain prompt deliveries of new machine tools has aided the sale of second-hand stock to some extent.

Foundries are all busy. Those making gray iron castings, which were affected by recent labor troubles, are improving steadily and deliveries are better than they have been for some months. Steel casting plants are crowded with work and more is offered than can in some instances be taken care of.

The Keystone Leather Company, Camden, N. J., will erect a new factory at Bristol, Pa. There will be a one-story and a two-story factory building, covering an area of 230 x 600 feet, constructed of brick, which will have the usual appointments. The contract for the power plant is expected to be placed in the next 30 days. The general machinery requirements, however, will not be large and will not be placed for some time.

Sealed proposals for the installation of hydraulic elevators in the Custom House, Baltimore, Md., will be received by the Treasury Department, Office of the Supervising Architect, Washington, D. C., until February 14, 1906. Drawings and specifications may be had on application to that office.

The Ericsson Line will place a contract, probably at an early date, for two new steamships for outside service between Philadelphia and Baltimore. These vessels will be 500 feet long, 40 feet beam and have a carrying capacity of 2000 tons each. They will be single screw ships, fitted with four cylinders, triple expansion engines and four water tube boilers, and have a guaranteed speed of 18 knots per hour. Accommodations for first and second cabin as well as ordinary passengers will be provided.

The Department of Public Works, Bureau of Surveys, City of Philadelphia will receive proposals until February 14, 1906, for the part and complete erection of six bridges of various types, including a two-span stone arch bridge at Allen's Lane, over the Wissahickon Creek; a plate girder deck approach to Spring Garden street bridge; a 60-foot plate girder bridge on concrete abuttments at Sedgely avenue and the Richmond branch of the Philadelphia & Reading Railroad, a reinforced concrete arch bridge at Wyoming avenue and the Philadelphia, Newtown & New York Railroad and a one-half plate girder bridge on concrete piers, on Front street, over the connecting railroad. Plans may be obtained from the chief engineer, room 416, City Hall.

Frank Samuel has purchased practically the entire equipment of the Muncie Pulp Mills, Muncie, Ind., consisting of 18 water tube boilers, 45 pumps of various kinds and a large quantity of pipe and machinery. The plant will be dismantled immediately.

The Barry & Zecher Company, Incorporated, Lancaster, Pa., which succeeded the John Best Engine & Boiler Works of the same city, has modernized the plant, adapting it particularly for the handling of iron castings and machine work on contract. A considerable amount of machinery has been installed and further purchases are contemplated. This company continues to operate the former plant of the Barry & Zecher Company at Plum street and the Pennsylvania Railroad, in connection with its present one in Fulton street below Plum street.

The Newton Machine Tool Works notes a large demand for cold saw cutting off machines, slotting machines and rotary planers. A number of boring tools as well as special machines have been ordered by the General Electric Company for its Lynn plant, and a number of cold saw machines will be furnished the American Locomotive Company for its various plants, while a large rotary planer has been ordered by Dyer Brothers, San Francisco, Cal. Inquiries are reported in good volume, covering mostly small lots of tools. The Newton plant is busy in all departments, and the outlook for a continuation of prosperous conditions is most satisfactory.

The Tabor Mfg. Company notes an extensive demand for both foundry molding machines and cold saws. The year 1905 was the best the company ever had, and the business of the past week was considerably in excess of that for the same period last year. There has been an increase recently in the foreign demand for molding machines, particularly those of the heavier types of jar ramming and split pattern machines. Extensive orders of hinged rock-over machines for domestic account have been received, 15 of the 24-inch machines having been recently sold for delivery in Pennsylvania, Massachusetts and Ohio. Four 12-inch power ramming machines will be furnished parties in New England, while four of the same type are to go to Western buyers; two 16-inch power rammers, one 40-inch, the other 56-inch in the clear, are also to be supplied parties in the same territories. Taylor-Newbold saws and Taylor tool grinders have been in good demand. Sales of a large number of saws, varying from 24 to 60 inches in diameter, have been made, 18 of which are for delivery in Pennsylvania alone. Deliveries of all their various lines are being extensively made, shipments going forward to all sections of the country.

The Baldwin Locomotive Works is busy in every department. Orders have recently been received for 60 locomotives for the Wabash Railroad, the type of which has not yet been fully determined. The 50 engines for which the Reading Railroad reserved space some time ago have been ordered and include 15 8-wheel passenger locomotives, 15 consolidation freight, ten 10-wheel freight and six 6-wheel switching engines. An export order for eight consolidation freight engines and nine 10-wheel passenger engines for the Central Railroad of Brazil has also been recently booked. There is a good demand for single engines from various industrial plants. The Baldwin Works has orders in hand to keep it actively engaged for months ahead.

The Wm. Cramp & Sons' Ship & Engine Building Company launched successfully January 25 the steamship Merida, being built by them for the New York & Cuban Mail Steamship Company. This vessel is one of four being constructed for this company by the Cramps. She is 400 feet long, 50 feet beam and 30 feet deep, and will have a speed of 15 knots per hour.

Chicago Machinery Market.

CHICAGO, ILL., January 30, 1906.

Western wood working machinery manufacturers report the same prosperous conditions that exist in iron working tools, and in most cases, except in smaller equipment, deliveries are from two to three months behind. The opening of timber lands in the West and in the South, notably in Tennessee, requires a large amount of heavy equipment, as saw mills are being located on the edges of a great many of these forests. Great progress has been made in the past few years in the design and general construction of wood working machinery, and the larger tools generally are being built stronger and heavier than ever before. Better prices are also being secured by the manufacturers for all classes of tools, and the increased price represents a higher class of workmanship and better material rather than a greater profit to the maker. In iron working tools January's record, of course, will fall greatly below that of December, which was the biggest month ever experienced by Western machinery manufacturers and dealers. Nevertheless, buying continues on a large scale and is well diversified. Manufacturers generally are unable to make deliveries on large tools in less than five or six months, and on the smaller tools three months is probably the best that can be done. Stocks on the floors of the machinery dealers are also low and are moving very fast.

The Chicago office of Manning, Maxwell & Moore recently closed a large equipment order for the St. Louis plant of the American Car & Foundry Company. It included five Hilles & Jones gate shears and seven Shaw electric cranes. This plant is being remodeled and a large amount of labor saving machinery is being installed.

The Griffin Wheel Company, Chicago, will erect a large car wheel plant at Pullman, Ill. Its daily capacity is to be 500 wheels. Details of buildings and equipment will not be available for a week or ten days.

The Phœnix Wire Works, Detroit, Mich., has purchased a 2-acre site and will erect a new factory. The building will be constructed in the shape of an L, being 185 feet on the railroad, 168 feet on a private alley and 50 feet wide.

The Standard Wire Fence Company, Woodstock, Ontario, is contemplating the purchase of a 36-inch gap lathe and a large drill press.

The Des Moines Stove Repair Company, Des Moines, Iowa, has had plans prepared for new buildings, which will cost approximately $20,000. The improvements will include a new foundry building, fire proof pattern house and an addition to the finishing and stock departments, which will practically double the capacity of the plant. The company intends to make a specialty of gray iron castings.

The Michigan Central Woolen Company, Centerville, Mich., is in the market for two tubular boilers, each 14 x 4½ or 5 feet.

The Beloit Water, Gas & Electric Light Company has been organized at Beloit, Wis., with a capital stock of $600,000, and has acquired business franchises and plants of the three companies which have heretofore independently furnished water, gas and electric light in that city. The new company will expend nearly $200,000 in extensions and enlargements of its buildings.

The Eagle River Electric Power Company, Baker City, Ore., will construct a hydro-electric power plant on the Eagle River near Sanger. From 1000 to 1200 kw. will be developed at the start. Direct connected three-phase 60-cycle 2200-volt dynamos will be used. F. W. Paine is president and J. Romig secretary and manager.

The general offices of the Weber Steel Concrete Chimney Company, Chicago, have been moved from 159 La Salle street

to suite 930-934 Marquette Building, where larger and more commodious offices are afforded.

The Abner Doble Company, San Francisco, Cal., announces that it has opened up a branch office in Los Angeles at 447 Pacific Electric Building. The company's business in the water wheel and machinery supply line had increased to such an extent that it became necessary to have better representation in the Southwest. The new branch will have for its field southern California, Arizona and New Mexico and parts of Nevada and Mexico. L. Cummins will have charge of the office.

In about four or six months the Silver Bros. Iron Works Company, Salt Lake City, Utah, will be in the market for modern machinery for equipping its proposed new machine and blacksmith shops and foundry. Joseph A. and James W. Silver have purchased for approximately $100,000 the interests of John A. and Hyram A. Silver in the company and within a few days a reorganization will be effected with the following officers: Joseph A. Silver, president and manager; James W. Silver, vice-president and assistant manager; L. S. Hills, treasurer, and Joseph C. Feuger, secretary. The company is planning to expend a large amount of money to enlarge its facilities to take care of its growing business and intends to erect large and modern shops on Fourth West street, between Sixth and Seventh South streets. The new shops will be equipped with the best type of machinery, so as to place the company in a position to produce the highest class of mining machinery and iron and brass castings.

Cleveland Machinery Market.

CLEVELAND, OHIO, January 30, 1906.

Few large individual orders are being placed, but the aggregate business is most satisfactory. A number of new factories and additions are being planned for the early spring and inquiries being received indicate some good orders in the near future. Manufacturers of hoisting and conveying machinery are particularly rushed with business and there are a number of large contracts in sight. The tremendous increase in ore and fuel tonnage moved on the lakes the past year has caused the railroads to plan for important improvements at their loading and unloading docks.

The Erie Railroad Company will make extensive improvements at Cleveland and vicinity. It is the intention ultimately to put in three fast plants at the Cleveland docks. All of these cannot be completed for the coming season, so for the present the company will content itself with adding a fourth leg to its Brown fast plant on Whiskey Island and contracts for this will be closed immediately. As soon as the ore situation eases a trifle it is the intention to treble the facilities at this point. The company is also planning to install extensive ore handling outfits at its storage yards at Randall, near Cleveland. It is the intention to move all the ore storage facilities to Randall, giving space at the present docks in Cleveland for the storage of cars. Several manufacturers are now submitting plans for large fuel handling outfits for Randall.

The Detroit, Toledo & Ironton Railroad Company is planning to install new fuel and ore handling docks on the river front at Toledo, and plans and estimates are being submitted.

The Carnegie Steel Company is making extensive improvements to its ore handling facilities at Pittsburgh and has placed a contract with the Brown Hoisting Machinery Company of this city for five large bridges and an ore tipple. This is one of the largest contracts for ore handling machinery placed in some time.

Foote, Burt & Co. of this city, well-known manufacturers of multiple spindle drills, have purchased the plant, good will and patents of the Reliance Machine Tool Company, Cleveland. They will add to the present line the manufacture of a full line of bolt cutters, bolt pointing and nut tapping machines heretofore built by the Reliance Company. To accommodate the increased business and plant they have arranged for an addition 30 x 120 feet adjoining their present building, and will also have another floor, 40 x 120 feet, in the present building, which will increase their floor space about 30 per cent.

The Lane Tool Company, manufacturer of drop hammers and steam hammers, is erecting an addition 40 x 120 feet, which will give it double its former capacity. It is installing a large boring mill, crane and other tools. Machinery will be electrically driven and a couple of motors will be installed.

Joseph Dyson & Sons Company, manufacturer of drop forgings, whose plant was badly damaged by fire some weeks ago, is erecting a new building on St. Clair street, near Kirtland street. No new machinery will be required, as the hammers in the old plant have been repaired.

The C. O. Bartlett & Snow Company, manufacturer of hoisting and conveying machinery, is planning to erect an addition, but it will probably not be started for several months, as the company has a number of large contracts on hand which it is rushing through. It recently installed a 16-inch Cleveland throat punch, an 84-inch and a 30-inch boring mill.

The Lake Shore Electric Railway Company, Cleveland, has placed a contract with the Westinghouse Electric & Mfg. Company for a 2000-kw. Parsons steam turbine and generator to be installed at the power station at Avon. The company will shortly close contracts for 1000 horse-power of boilers, mechanical stokers and other auxiliaries.

The Carnahan Stamping & Enameling Company, Canton, is installing a 20-ton electric crane, with lifting magnets for handling steel.

The Canton Pump Company, Canton, is planning to erect an addition to its shop which will about double its capacity. F. O. Hamilton of Ashland, Ohio, will become secretary-treasurer of this company February 1, succeeding Frank Zollinger, who has gone with the Arctic Ice Machine Company, Canton.

The Toledo Metal Wheel Company, Toledo, has commenced work on a four-story brick and concrete factory building, 60 x 100 feet. An electric power plant is also being erected.

The New Century Wire Fence & Post Company, Toledo, has been incorporated for $20,000 by Owen Blackmore, Charles F. Black, Frank E. Humphrey and others. The company proposes to manufacture wire fence by a machine patented by Mr. Black. It is the intention to erect a factory on the Toledo Terminal & Belt Railway and several sites are under consideration.

The Standard Machinery Company, Bowling Green, is completing a new concrete factory building, which it expects to place in operation in about two weeks. The company will manufacture bolt and nut machines, lawn mowers and a scoop for unloading cars.

The Automatic Clutch Company, Akron, has organized with the following officers: Will Christy, president; John Hearty, secretary; E. E. Andrews, treasurer and general manager. The company manufactures clutches for automobiles and machinery, and at present it occupies part of the factory of the Akron Electrical Mfg. Company, but plans are being made for the erection of a new factory building. A site in Akron or vicinity will be selected in the near future.

The Ohio Brass Company, Mansfield, whose plant was badly damaged by fire several months ago, is making excellent progress with three large buildings now under erection. It is expected that some of the departments will be ready for occupancy within the next 30 days. The new plant will be thoroughly modern and fire proof.

The H. J. Spieker Company, Toledo, building contractor, has received a contract for the erection in that city of a 12-story office building. It will have an independent heating and power plant, lighting equipment, electric elevators, &c.

New England Machinery Market.

WORCESTER, MASS., January 30, 1906.

The customer of the manufacturer or dealer in machine tools is learning to school his soul to patience these days. Not only are quoted deliveries far in the future but promised deliveries are usually overdue, which is the cause of peremptory letters and telegrams which, fortunately for the machine tool men, they are getting accustomed to, and are suffering less in spirit from than they used to. Customers do not seem to realize that it does little good to fume and fret. Usually delay in delivery beyond the promised time is not due in the least to a promise wilfully made in bad faith. The machine tool manufacturer is also a customer, and he, too, has to wait for others. His castings may be late or it may be an electric motor which has not arrived as agreed, this latter delay being a very common one, because the manufacturers of electric equipment are unable to meet the demands made upon them. The customer cannot accuse the manufacturer of not being forehanded. The time has gone by when early preparations made for such a period as this could count for much. Another factor of delay in delivery of machine tools lies in the very nature of the product. Each tool must be tested out to do the work for which it is designed, and where weaknesses are found they must be remedied. The manufacturer of machine tools is usually perfectly conscientious in his promises of delivery, but he cannot take into consideration all the possible contingencies which may arise to hamper the exact fulfillment of his contracts.

Conditions in the trade in New England have changed in no way. In some lines the demand has probably increased, though this may not be said of machine tools, perhaps, for business was about as good as it could be. Every indication points to a strong local market for new machine equipment in New England, and power plants of all descriptions are being planned, which will continue the strong demand for engines, boilers, steam pumps, condensers, compressors and the various accessories which enter into this class of equipment. The excellent local crops of last season have made the New England farmers good buyers of farm machinery. The lumbermen of the northern woods are worried over the outlook for getting out their winter's cutting because of the partial absence of snow for sledding, and this may tend to decrease the demand for saw mill equipment later on unless

the winter ends with more normal weather than has so far characterized it. The warm weather has given ample opportunity for new building, which has progressed much more steadily than is usual in the winter months, and this has had its effect upon general business.

There is little chance that there will be a meeting of the planer section of the National Machine Tool Builders' Association before the spring meeting of the association which is scheduled for Atlantic City in April. The date has not been set, excepting in the general decision of the month. It had been expected that the planer builders would get together at an early date to act on prices. The general advance has gone into effect, but in addition to this a readjustment of the prices of various fixtures is considered necessary. The makers of planers are in some instances far apart in the matter of motor drives, variable speed devices and everything which is not regularly included in a standard planer. This has been demonstrated in the tabulated statement of prices and weights which was recently sent out by President E. M. Woodward of the National Association, prepared from data furnished by the various manufacturers according to the agreement made at the special meeting at New York. A basis for readjustment has been procured, and the various manufacturers have very naturally given the matter much thought. However, it is generally thought best to wait until April before taking up the matter as a body.

The tabulated statement of weights and prices prepared by Secretary Montanus for the lathe section of the association needs no discussion. It was intended, not as the basis of concerted action, but for the individual assistance of members in readjusting their own prices where it is demonstrated to them by the table that they have been charging too much or too little, especially the latter.

The shaper manufacturers have little expectation of arriving at a price agreement. Most of them have advanced prices, the percentage being about the same as that of other types of machine tools. But this was not a concerted action. Some of the manufacturers believe that the wide difference in the makes of shapers would preclude any chance for beneficial co-operation, excepting in a very general way. Possibly this matter will come up for discussion at Atlantic City. The radial drill section will have interesting matters to discuss at this meeting.

The American Steel & Wire Company is to spend about $600,000 of its appropriation for improvements at the plant at Worcester, Mass. Various departments will be improved, with the addition of manufacturing space and the installation of new equipment, including material additions in power. Two new buildings will be erected at the south works. One will be for the electric cable department of the insulating works, the main structure to be 124 x 200 feet, with two smaller additions. The rope mill will have an addition covering about 11,000 square feet on the ground and probably two stories and basement. At the north works a tempering building will be erected, one story and 85 x 120 feet, and a new annealing and cleaning house 75 x 110 feet, also one story. The appropriation includes two large pumping engines, one for the south works of 6,000,000 gallons capacity and one for the north works of 4,000,000 gallons. The former has already been contracted for and is being built by the Snow Steam Pump Works, Buffalo. The contract for the 4,000,000-gallon pump has not yet been awarded. The pumps will be used for both general purposes and for the fire service of the two works. Both are built to provide capacity above their rating when the demand shall require it. A new electric unit of 500 kw. will be purchased for the south works. The boiler plant of the north works will be increased some 300 horse-power. Another improvement at the north works will be an electric galvanizing equipment. This will not require new quarters, but will be provided for by changes in a present building. Provision is made for compounding the blooming mill engine at the south works for the sake of economy of operation.

The Bangor Railway & Electric Company, Bangor, Maine, will improve its water power by the erection of a new dam at Veazie, Maine, which will replace one of wood. The new dam will be of concrete and about 1400 feet long and 10 feet high. The power increase will be what will be saved by replacing a leaky dam with one that is tight. The present dam affords an excellent illustration of the life of a timber dam, for it was built in 1833.

The American Locomotive Works has equipped its new wheel shop at the Providence works with a Niles tire turning lathe and a 5-ton Niles traveling crane. The building is 24 x 85 feet and 30 feet high.

Boston is providing for the extension of the subway system to take care of the rapidly increasing demands which are being made upon the traffic within the city and to and from the suburbs. The Transit Commission has filed a report in which are advocated a subway running from the corner of Boylston and Tremont streets to Copley square, at the West End, and a cross town subway from Park square to the South Station. These lines would be favorably located for extensions when the need is felt. The Washington street subway, now constructing, will be ready for use in a year and a half, according to this report. With the projected underground freight system, connecting the northern and southern freight terminals, and that in Cambridge, the rapid transit of the city and suburbs promises to be very well cared for.

The Worcester Polytechnic Institute is to erect a new laboratory building for the use of the department of electrical engineering. The building will be a large one, but the dimensions are not yet available. The laboratory is planned to provide for the growth of this important department for a number of years to come. It will relieve the present Salisbury laboratory building, affording room for the growth of other departments.

The Torrington Mfg. Company, Torrington, Conn., manufacturer of special machinery and metal specialties, has increased its capital stock from $30,000 to $60,000 and proposes to enlarge its works and make many improvements, including the installation of new machinery later on.

Cincinnati Machinery Market.

CINCINNATI, OHIO, January 30, 1906.

The situation in machinery circles is apparently the same as it has been for the past few months. Everybody is as busy as can be. Considerable new work has been received during the past few weeks, and if the opening month of the year is any criterion the chances are that this year will far eclipse its predecessor. Not for a number of years has the weather been so mild and well fitted for all kinds of industrial activity as has been the case this year, and the work of expansion, enlargement of shops and making other important changes has gone steadily forward in as rapid a manner as in midsummer.

It begins to look very much as though builders of tools would be compelled to make another advance in the price of their product, arising from the fact that on March 1 the railroads will advance the freight rate on pig iron from the South 25 cents per ton. As the consumer will of course be compelled to stand this additional charge if present conditions are maintained, a further raise in prices must necessarily follow. There will be a corresponding advance in freight rates on cast iron pipe and manufactured iron articles to Ohio River points and Eastern gateway and Virginia cities.

The Cincinnati Industrial Bureau held its fifth annual meeting at the Business Men's Club January 24. President William Lodge presided and in his remarks touched on the work of the bureau for the past year. Secretary Finch submitted his report, which showed the almost phenomenal growth of the city during the five years of the bureau's history. Some of the statements made in this report are of general interest, as follows:

"There have been established in what may be termed the Cincinnati district during the year 15 new industries. This number includes the large and small, those established in whole or in part by local capital and those coming from other points without regard to local capital. These concerns will, when all are in operation, employ not less than 1000 hands, at an average weekly payroll of $10,000, based on the conservative estimate of $10 per hand. This means the distribution of $500,000 additional payroll annually. Added to those previously reported, the bureau may claim a record of 65 new factories for Cincinnati during the five years of its existence. To accomplish this result has required a total expenditure of only $22,773, or an average annual expense of $4550. One week's payroll of these 65 factories would more than pay all the expenses of the bureau during its entire existence, and the payroll of any one of the four factories established last year would in two weeks pay the bureau's expenses for one year.

"Almost with the inception of the bureau in 1901 were begun efforts to secure a steel castings plant and in every year there has been more or less activity in that direction. Twice sites were selected for large plants, but each time the financial plans were disarranged at the last moment. President Lodge determined that his administration should include the location of such a plant. The Steel Foundry Company was incorporated early in December, with a capital of $100,000. Since then a site of 5 acres has been acquired at Winton place, contracts for buildings and equipment for a plant with a capacity of 350 tons per month have been let, and the foundry is promised to be in operation by May 1. In the neighborhood of 200 men will be employed. Mr. Lodge was on the ground this afternoon and began the work of excavating by throwing three shovels of earth from each of the four corners."

The Victor Safe & Lock Company has purchased 15 acres of ground at Norwood, to which the entire plant will be removed in the near future. The facilities for shipping will be of the very best, as the ground lies immediately on the belt line of road where connection may be made with all the lines entering the city. It is the intention to erect a concrete steel stucture 100 x 400 feet for vault construction within the current year and equip it with new machinery throughout. The company has recently added considerable

equipment to its plant and this, in addition to what is necessary to fully equip the expanded works, will be removed to the new site on the completion of the building.

The Midvale Steel Company has established a warehouse in this city at Second and Elm streets. C. F. MacKinnon of Chicago will be in charge.

The Hamilton Machine Tool Company has increased its capital stock from $300,000 to $350,000.

Sealed proposals will be received at the office of the Board of Trustees, Commissioners of Water Works of this city, until 12 o'clock noon February 23, for 3½-inch special castings for its filtration plant; for three direct connected electric generating units of 150 kw. capacity each, driven either by an engine of the condensing turbine type or of the vertical reciprocating compound condensing type; one switchboard, two air pumps and condenser units, piping, &c.; two units of coal hoisting machinery, with appurtenances and of four movable steel aprons, and of 12 steel dump cars of 2 tons capacity each for the eastern or river pumping station and the western or main pumping station. Copies of the specifications, plans, &c., can be procured by application to the chief engineer of the Board of Trustees, Commissioners of Water Works, Cincinnati, Ohio.

The Cincinnati Employers' Association held its annual meeting January 23, which was largely attended by most of the machine tool men of the city. Secretary Charles Waltz made his report, in which it was shown that every strike declared in the city during 1905 was lost by the strikers. During the year about 2000 men were out on strikes, with 14 cases of violence, as against 231 cases of violence the year before with only 1400 men on strike. There were 451 calls for police protection during the year. The one strike now engaging the attention of the association is at the Walton Iron Works, which is practically a strike against the open shop. The same Executive Committee was re-elected for the ensuing year, which will meet in a few days and elect a secretary, at which time Mr. Waltz will no doubt be elected to succeed himself.

Government Purchases.

WASHINGTON, D. C., January 30, 1906.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 13 for a motor, arbor press and other supplies for the Eastern navy yards.

The Isthmian Canal Commission will soon call for bids for two engines and generators.

The Quartermaster, Fort Riley, Kan., will receive bids until February 12 for two steam boilers and other power plant equipment.

The following bids were opened January 23, serial No. 295, by the Isthmian Canal Commission:

Bidder 3, Hallidie Machinery Company, Seattle, Wash.; 5, B. F. Sturtevant Company, Hyde Park, Mass.; 9, Northern Electrical Mfg. Company, Madison Wis.; 11, Engberg's Electrical & Mechanical Works, St. Joseph, Mich.; 25, Westinghouse Electric & Mfg. Company, New York; 29, A. Baldwin & Co., New Orleans, La.; 30, D'Oiler Engineering Company, Philadelphia, Pa.; 32, M. W. Hill Company, Baltimore, Md.; 33, Sprague Electric Company, New York; 36, Fox Bros. & Co., New York; 37, Allis-Chalmers Company, Baltimore, Md.; 39, Manning, Maxwell & Moore, New York; 42, The C. & C. Electric Company, New York.

Class I.

Item 1. One 5-kw. direct current engine and dynamo for La Boca—Bidder 3, $548.25; 5, $565; 9, $530; 11, $490; 25, $503; 29, $607.63; 30, $580; 32, $749; 33, $483; 36, $550; 37, $629; 39, $1286.25; 42, $525.

Item 3. One 5-kw. direct current engine and dynamo for Cristobal—Bidder 3, $548.25; 5, $565; 9, $530; 11, $490; 25, $503; 29, $607.63; 30, $580; 32, $749; 33, $483; 36, $550; 37, $629; 39, $1286.25; 42, $525.

Under bids opened January 9 for supplies for the navy yards the following awards have been made:

Holtzer-Cabot Electric Company, Brookline, Mass., class 111, one electric motor drive, $529.

Becker-Brainard Milling Machine Company, Hyde Park, Mass., class 113, one plain milling machine, $300.

Garvin Machine Company, New York, class 114, one screw cutting engine lathe, $460.50.

At the recent annual meeting of the stockholders of the Salisbury Steel & Iron Company, Utica, N. Y., the following officers and directors were elected: Edward L. Wells, president; William Kerby, vice-president; W. H. Switzer, secretary and general manager; F. R. Switzer, assistant secretary and treasurer; Henry Jewell, superintendent of mines; Henry N. Clark, George C. Wing, A. M. Mills and J. A. Owens.

Figures compiled by the Pennsylvania Railroad show that the aggregate tonnage to and from the various mills and blast furnaces in the Pittsburgh district hauled over its lines in 1905 was 21,355,926 tons, an increase over 1904 of 5,716,980 tons. This tonnage represents coal, coke, ore, pig iron and rolled products in all forms.

New Publications.

Practical Pattern Making.—By F. W. Barrows. 12mo; pages 326; illustrations, 141. Published by the Norman W. Henley Publishing Company, New York. Cloth, $2.

The author is a practical patternmaker and has written a number of articles for mechanical journals. He divides the book into six parts—the first devoted to a general discussion of patternmakers and pattern making and to some methods commonly employed; the second to materials and tools; the third to special examples of wood patterns; the fourth to metal patterns; the fifth to pattern shop mathematics, and the sixth to cost, care and inventory. The illustrations are from actual working drawings made by the author and are clear and informing, indicating how to avoid many of the difficulties which beset the patternmaker. The section for rules, formulas and tables gives simple methods for finding the weight of castings, both from the pattern itself and from the drawings. A number of new and practical formulas are given. In the last section of the work some rules are given for keeping down the cost of patterns, together with a system for checking the cost and marking patterns. The author recommends a card record showing what the pattern is, the material used, where stored and cost and date of production. Particularly valuable and up to date is the information given concerning the mounting of metal patterns on plates for molding machines.

Glue, Gelatine and Allied Products.—By Thomas Lambert. 12mo; pages, 153; illustrations, 25. Published by Charles Griffin & Co., Ltd., London, and by J. B. Lippincott Co., Philadelphia. Price $1.75 net.

The advance made in the glue and gelatine industry in the last few years gives timeliness to this book, which presents the new methods resulting from a better scientific knowledge of raw materials and their treatment. There are 11 chapters—the first historical, the next three dealing with glue, the fifth with gelatine, the sixth with size and isinglass, the seventh with the effluents produced in glue and gelatine making, the eighth with liquid and other glues and cements, the ninth with the uses of glue and gelatine, the tenth with residual products from glue and gelatine, and the eleventh with analyses of raw and finished products. Additions to the usual treatment of the subject are the sections dealing with waste and residual matters, and their value when converted into fertilizers, also the section dealing with the physical and chemical testing of the raw and finished material.

The Mineral Industry, 1904. Vol. XIII. The *Engineering and Mining Journal*, 505 Pearl Street, New York, and 20 Bucklersbury, London, E. C., England. Pages 589. Price $5 or £1 10d. per copy.

This volume, which is stated on the title page to have been prepared more particularly under the supervision of Edward K. Judd, may be considered somewhat late with regard to statistics, but its scope shows that great difficulties have been surmounted in endeavoring to present information of such a comprehensive character. It covers not only statistics of mineral production throughout the world, but also information of practically every other kind desired by those who are interested in minerals. The contents are encyclopedic in their character, as they include the developments in the opening up of mines, in the discovery of new deposits and the exploitation of new processes in the mining and metallurgical world. The information given embraces such matters as progress in ore dressing, the latest geological theories and technical progress in smelting. The commercial side also receives attention, as a great deal of information is given relative to business on mining stock exchanges and prices of metals throughout the globe.

Trade Publications.

Engines.—Boston Steam Engine Company, 246 Summer street, Boston, Mass. Circular. Refers to a high speed inclosed type of engine for the driving of dynamos, fans, centrifugal pumps and all high speed work. It is described as especially suitable for electric generating sets.

Automatic Engine Stop.—Locke Regulator Company, Salem, Mass. Catalogue. Contains a complete description of the Locke automatic safety appliances for steam and electric motors, including an automatic engine stop, a combined throttle and automatic engine stop, an automatic speed limit governor, an automatic vacuum breaker, an automatic speed limit valve and a multiple loop system of electric wiring with test board. A description of the Locke automatic engine stop and speed limit system was given in *The Iron Age*, October 26, 1905.

Precision Scales.—Wm. Ainsworth & Sons, Denver, Col. Catalogue A. Size, 6 x 9 inches; pages, 36. Describes, illustrates and gives the prices of several different types of assay, analytical and pulp balances and weights of precision.

Engineering Specialties.—James Reilly Repair & Supply Company, 229 West street, New York City. Catalogue. Size, 6 x 9 inches; pages, 52. Covers an extensive line of engineering and marine specialties and supplies. It is particularly addressed to marine engineers and in general to the engineering profession which may be interested in the economy in coal consumption effected by the various auxiliaries described. Considerable accurate information concerning the various devices is included and every effort has been made to make the information reliable.

Steam Pumps.—Buffalo Steam Pump Company, Buffalo, N. Y. Catalogue No. 87. Size, 5½ x 7½ inches; pages, 130. The catalogue covers pumping machinery for every service and is divided into two sections, one dealing with steam and power pumps and the other with centrifugal and turbine pumps. The first section gives complete the prices of steam and power pumps of all types, both brass and regularly fitted patterns. The second section covers its subject more thoroughly than any previous catalogue, and is of special interest from the tests which it gives, with curves of performance and the characteristics of centrifugal pumps. Useful information is also given concerning where the pumps should be used and what types are best suited to certain conditions. Details of construction are described at some length and a large amount of useful information is given in tables.

Air Lift.—Ingersoll-Sergeant Drill Company, 11 Broadway, New York City. Catalogue 73. Size, 6 x 9 inches; pages, 96. "Water Lifted by Compressed Air" is the subject of this catalogue, which deals with various applications of what is known as the "air lift system" and the theory of the air lift. A description of the Pohlé system and a considerable discussion of the cost of pumping by this means are included, and a similar description is given of the Saunders air lift system. The catalogue may be justly considered a treatise on the subject of pumping by compressed air and will have considerable value to those who can profitably increase their water supply from artesian wells. The latter part of the catalogue contains illustrations of a number of different types of air compressors, including steam and power driven forms, and views of a number of installations of air lift.

Milling Machines.—R. K. LeBlond Machine Tool Company, Cincinnati, Ohio. Pamphlet. Size, 4 x 6 inches; pages 64. Deals with the distinctive features of the LeBlond miller, and especially those which contribute to a saving of time and money and to an increased producing capacity. The line covered consists of eight sizes of plain milling machines and six sizes of universal. Various parts of the machine, particularly those departing from common practice, are made the subject of individual illustrations and descriptions. Attachments are given some little consideration, followed by a brief reference to motor drive. The reading matter is quite extensive and makes a direct appeal to the purchaser by a straightforward explanation of the machines unembellished with extravagant claims.

Steam Indicators.—Crosby Steam Gage & Valve Company, Boston, Mass. Pamphlet. Describes the new Crosby indicator, which departs from the ordinary type in having the spring outside of the piston cylinder, where it is unaffected by varying temperatures of steam, the object being to eliminate the error due to that cause. Another point particularly referred to is the freedom of the piston movement, due to less internal friction, which practically removes the necessity of another correction commonly necessary.

Bolt Forcers.—Watson-Stillman Company, 46 Dey street, New York City. Circulars. Show three types of hydraulic bolt forcers for removing coupling bolts from steamship shafts. Sheet 325 shows the smallest type, sheet 326 lists five sizes of a type with a movable hydraulic cylinder and sheet 329 11 sizes of a type provided with a movable ram.

Screw Machines.—National-Acme Mfg. Company, Cleveland, Ohio. Postal card. Contains a photograph of an Acme automatic screw machine of the latest design, having a 2¼-inch chuck capacity.

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HARDWARE

WE print in this issue interesting letters representing divergent views on the subject of manufacturers paying for the representation of their goods in the catalogues of jobbers. One of these letters is from the trenchant pen of a manufacturer whose *nom de plume* is familiar to our readers. In it is pointed out some of the objections from the manufacturers' standpoint to the practice under consideration, while at the same time reference is made to the tendency, which is so evident to those who are in touch with trade conditions, toward direct relations between manufacturers and retailers where the volume of business is sufficient to justify them. Certainly the success of the project of the Heavy Hardware jobbers of the West to which we called attention last week would tend to make the position of the jobbers more difficult than at present and to disturb further the existing relations between the various classes of trade.

Another letter given on one of the following pages is from a jobbing house and takes an entirely different view of the question. In it the writer in his well known forcible and felicitous diction with ingenuity and skill of argument maintains that it is only proper that manufacturers should pay for the representation of their goods in the jobbers' catalogues on the ground that such representation is advertising. In defending this position he points out the manner in which the catalogue is used by the salesman and his customer as page after page is turned and the claims of the various articles shown are considered and orders in many cases secured. This is certainly ingenious and plausible.

It may, however, occur to our readers to note some peculiarities of this method of advertising—if it be advertising—in that the manufacturer's name is not given; that, on the other hand, it is most carefully kept in the background; that the manufacturer's articles are frequently so disguised by fictitious names that it is impossible even for those who are well informed to find out who made the goods; that while those who advertise in the ordinary old-fashioned way in the columns of a trade paper, for example, find inquiries and orders coming from parties all over the country and frequently from foreign lands, in this new fangled advertising not a new customer is secured or even desired. The jobber who gets pay for the "advertising" monopolizes the business that results from it. Under this ingenious arrangement he receives payment for the advertising and all the orders that result from it go to him. The disinterested student of the question will probably conclude that such representation in the jobbers' catalogues may perhaps be regarded as advertising in a broad sense, but that it is the jobber's advertising and that the jobber should pay for it.

Condition of Trade.

Now that the record of January is complete it is evident that there is no reason to regard it in any way as disappointing. The letting up in the volume of current business as between manufacturers and merchants, large and small, which naturally follows the holiday season, and is occasioned in part by attention to the closing of the books and preparations for spring business, has been succeeded by an improved and indeed active demand. The open winter has been unfavorable for certain cold weather goods and in many parts of the country Skates and Sleds and other seasonable commodities have been slow of sale and some of the merchants are carrying over larger stocks than usual. At the same time the character of the weather has contributed directly and in a marked degree to the continuance of outdoor activities and in many cases building has gone along without interruption. Prices do not this week show many important changes, but in several lines higher quotations are announced. The tone of the market practically all along the line continues steady, with a trend toward increased strength. There does not seem to be much speculative buying, as merchants realize that the manufacturing facilities of the country are enormous and that there is being put on the market this year a greater quantity of goods than ever before in the history of the trade. There is, however, confident buying on all sides, as consumption is constantly absorbing great quantities of goods, sometimes in an unobtrusive manner through retail sales, the aggregate of which, however, is great. Along with this distribution of goods by merchants there are great transactions in which capital and enterprise unite in a large way in putting into consumption great quantities of products. Employment is thus given very generally and indeed almost universally to labor, the complaint being in many directions of the difficulty in obtaining workmen. The financial situation fortunately gives little ground for complaint or apprehension and collections are generally reported good.

Chicago.

Weekly developments in the Western Hardware trade reflect the great prosperity of this section of the country and the buying movement, which set in early last fall, generally speaking shows no sign of abatement. Jobbers are practically swamped with orders for goods for spring and summer consumption and dealers are anticipating their wants in greater volume than ever before. Hardware manufacturers continue behind on deliveries and the continued price advances show the strength of the entire situation. The prosperity of the trade has engendered a feeling of optimism that may lead to overbuying and overproduction, but as yet there are no indications that this has been done, as all commodities are rapidly going into consumption, as shown by dealers' stocks. To ascertain to what extent Wire products are being carried by large distributers and dealers the entire Western section of the United States was carefully canvassed by one of the largest producers and it was found that stocks were unusually low for this season of the year, and it can therefore be logically concluded that the heavy buying in these lines is without the speculative feature. The production of Black and Galvanized Sheets is unusually heavy at present, but owing to the low prices at which most jobbers and consumers covered their future requirements every ton contracted for is being taken out and what percentage is going into stocks cannot be ascertained definitely at present. On Galvanized Sheets the mills cannot make deliveries in less than from six weeks to two months and on Black Sheets they are fully a month behind. Stocks of Light Sheets in the hands of distributers are ample and deliveries prompt, although this is not true of the heavier gauges. Manufacturers of Log and Coil Chain have advanced prices $2 a ton, due to the increased cost of raw material, and Carriage and Machine Bolts have again been advanced 5 per cent. Several manufacturers of Strap and T-Hinges have individ-

ually advanced prices from 5 to 7½ per cent. This advance is the more remarkable on account of the demoralization which has continued in this trade in the past, the manufacturers not acting in unison on price policies.

Cleveland.

THE W. BINGHAM COMPANY.—Cleveland is one of the largest Hardware markets in the United States. There are five Hardware jobbing houses here, all of which carry immense stocks of goods, and these stocks are splendidly assorted. They carry everything in Mining, Milling and Manufacturing Supplies and Tools, Builders' Hardware of all kinds and grades, many of which are seldom carried by ordinary Hardware jobbing houses.

Cleveland is one of the best distributing points in the country, having splendid shipping facilities, both by rail and water. It is the seventh city in population in the United States. It has 3400 separate and distinct manufacturing enterprises, with an annual product worth more than $150,000,000. Cleveland is the first city in the United States in shipbuilding, and the second largest shipbuilding city in the world. It is the largest iron ore market in the world. It ranks first in the United States in the production of Heavy Machinery, Wire Nails, Bolts, Nuts, Carriage Hardware and Forgings. Cleveland produces more than half of the sugar machinery manufactured in the United States.

In Cleveland are made the largest telescopes and cotton presses and 60 per cent. of the Gas and Gasoline Stoves used in America. Cleveland has the largest paint factory in the United States, also the largest electric light carbon plant, and the largest automobile plant. The population of Cleveland in 1850 was 17,000; in 1880 was 160,000; in 1890 was 261,000; in 1900 was 382,000; in 1905 was 475,000.

Manufacturing, jobbing houses, savings and national banks are the backbone of the community of Cleveland. This is also the savings bank city of the country. With about one-half of 1 per cent. of the population of the United States, Cleveland savings banks have more than 6 per cent. of the total savings deposits, in addition to which our savings banks have deposits from almost every civilized country in the world. This may in part be due to the fact that Cleveland savings banks pay 4 per cent. interest on deposits, while nearly if not all the other banks in the country pay but 3 per cent. Cleveland business men are united in constant effort for Cleveland prosperity. With all these great privileges and the immense trade we control, we are very happily and comfortably situated.

The Hardware business in all its branches since January 1 has been very large. Indications are that the tide of prosperity has just set in.

Statistics in regard to exports from the United States to foreign countries show very large figures. It is stated that about $200,000,000 was involved in the last month in exports. While such large quantities of goods are going out of the country, we need fear no stagnation of trade by reason of surplus stocks. We speak of these things in the way we do, for we are enjoying a splendid trade.

The question has been asked us many times—How long are these good times to last? We predict that they will last just as long as we keep our heads and mind our own business, and keep the large amount of money that is in the country in circulation. There seems to be enough of it to keep the wheels of industry humming and the bartering traders busy.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Inquiry among the Hardware people in the city indicates that there is a good demand for Hardware, but not for the class of goods that is usually sold in January. Heretofore it has been the custom of the retailers in January to stock up heavily on spring goods, almost to the exclusion of other lines; it has not been the case so far this month. The orders on close inspection look more like October and November business than January business. The strong demand for Wire and Nails which is ordinarily a conspicuous feature of the business in January is not in evidence this year. There was a fair demand for Nails and Wire in November and December, but the demand in January has been exceedingly light. We believe the jobbers are getting the usual spring business at this season of the year in the matter of volume, and that the class of goods they are selling is preferable from the seller's standpoint. Collections are good, and we believe that spring business generally will prove to be quite satisfactory.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The new year opens up with every promise of justifying its most flattering prognostications. The weather here is still open and fine, the thermometer just around the freezing point every morning and rising 10 or 15 degrees as the bright sun pours down its beams, but never cold enough to interfere with any outdoor work, cloudless skies and active industries on every hand conspiring thus to give everybody confidence. All of the factories of every kind are busy and behind with their orders. Labor is extremely well employed at remunerative prices and farm products were never more in demand.

The State legislatures and other bodies of that kind are in session to be sure, and of course are undertaking to regulate the universe from matters of interstate insurance down to caring for their friends in cities of the sixth class. We, with other States, always have a very "bad quarter of an hour" until the day of adjournment comes. In our own State we have the question of the construction of a State capitol which began on the basis of one million. The call for a second million is already out and countless reasons why the second million is very much more important than the first. The State has no bonded debt, so there is a tendency always on the part of local financiers and their friends to tempt us into that form of obligation, so that we may have something to bequeath to posterity.

Money is fairly abundant and we hear no more complaints of the excessive rates demanded in December. We do not know whether to take seriously or not the gentlemen in Wall Street who complain that our currency is inelastic, therefore bad. Just what constitutes elasticity and what would happen if bank notes were all made out of India rubber we cannot say, but we have an idea here that the great financial institutions in New York tie it up or let it loose when they choose. The fact that they have this restrictive power is one thing which at times prevents speculation from running away with itself.

People are buying securities now because they have the money to buy them with, and because they believe they are worth what they are paying for them, or that they are going higher. With the great world production of gold it is only natural to believe that certain values will be permanently higher. The high priced cotton which has been so well maintained is a guarantee that a large crop will be put in this year, so the Southern planters are getting very busy now. The demand for harness, plow goods and planting and cultivating implements is probably in excess of anything we have seen before, while the railroads are pushed to the limit of their capacity in the transportation of general merchandise.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—January was an unusually good month. Sales increased largely over last year. This time a year ago trade, travel and traffic were frozen up tight. If business continues throughout the Spring months as it has started in January we surely will have no cause for complaint. It is evident that retail merchants in our territory are enjoying a regular, steady business. The weather has been so mild outdoor work and building have continued without interruption. Some jobbers have stimulated their business by threatening their customers with enormous advances which were about to occur in the hardware line. The song of their salesmen has been "Get your orders in early so you can enjoy full benefit of these advances. There is going to be such a tremendous business later in

the season unless you buy your goods now we cannot fill your orders in March and April."

The writer has been in the hardware business a good many years and fails to remember any year, in modern times, when the retailer could not get enough goods. There may have been occasional delays but they were never of a serious nature.

It may be a good idea to try to get the lion's share of a dealer's business by getting him to load up in January, but we doubt the wisdom of this policy. After a while promised advances do not take place, the dealer is overstocked and there is liable to be a reaction in his mind against the jobber who frightened him into over-anticipating his wants.

Our observation has led us to believe there is little profit to a retailer in speculating. The men who buy their goods as they need them generally fare best.

One of our customers called recently and desired to place his orders all in a lump for the next six months. The proposition looked very tempting. He said a salesman had called on him and told him all about the advances that were coming. However, we resisted the temptation and advised him not to overstock. We told him we expected to have a few goods on hand throughout the spring and thought we could take care of his business. As far as all the advances were concerned we intimated to this customer that in our opinion he would never make a fortune cornering the hardware market.

Maybe we are old-fashioned in our ideas and not up-to-date. We have seen retail dealers get rich selling a lot of goods at a good round profit, but we never knew one to get rich or add substantially to his income speculating.

Taking the Hardware market as a whole, prices are comfortably high now. We have not had a panic or a low-priced era for several years. We suggest to our retail friends, if they insist upon speculating, to follow the plan of the "wise ones" in the East who accumulate cash by selling in flush times when everybody else is buying, and come out of their holes to buy in times of panic when everybody else is compelled to sell.

We do not consider the Hardware market to-day as a bargain counter by any means. Just so, just so.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Trade in the Pacific Northwest is coming in in good strong volume considering the season, and dealers are looking forward to a good business for the first six months of the year, or at least until crop prospects show up for good or bad. Weather so far this season has been favorable, both for farming and stock interests, while building in this city has gone on uninterruptedly.

There is little or no change to report in prices except a decline in Wire products against advances in the East. Last year jobbers secured a profit that will not be in evidence this year on Nails and Wire. Collections continue to be made as easily as heretofore reported.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—There is very little in the way of change to note since our last report, although locally there has been a decided and unusually early demand for Garden Tools, &c., due undoubtedly to the phenomenally mild winter weather experienced over a great portion of the country east of the Alleghanies. With the thermometer in the seventies for several days it was hard to realize that we had not forgotten to pull off a couple of monthly leaves from *The Iron Age* calendar. Bees and wasps, flies and even mosquitoes appeared, and shrubbery and plants showed the effects of summer weather. This has stimulated all sorts of out of door work, and building operations both large and small are starting up a couple of months earlier than in other seasons.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The month of January closes with a very satisfactory record indeed. This may be accounted for somewhat by the continuous open weather prevailing, permitting building operations to proceed almost uninterruptedly; something unusual at this season of the year.

Many new enterprises are being planned for construction as soon as spring opens, so that inquiries for large amounts of material are numerous and varied. At the same time general trade is exceedingly good, so that a busy time is in progress, if it is midwinter.

The satisfactory volume of business now being transacted warrants the conclusion that a very heavy trade will develop before the advent of spring weather.

NOTES ON PRICES.

Wire Nails.—Up to the end of January demand was unusually heavy for the season, while specifications on contract orders were received freely. The large demand during the past two or three months may have the effect of lightening the usual spring pressure on the mills and secure more prompt shipments. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days.

Carloads to jobbers	$1.85
Carload lots to retail merchants	1.90

New York.—Owing to the continued mild weather which is suitable for carrying on building, demand from nearby points is in excess of what is usually expected at this season. Some merchants who placed contract orders for delivery in March find that demand is such that they are calling for immediate shipments. Prices are fairly well maintained. Quotations on small lots from store are on the basis of $2.10 per keg.

Chicago.—To what extent the heavy consumption of the past three months will cut into the usual spring demand cannot yet be ascertained, but it is believed that the mills will generally be in a better position to make fairly prompt deliveries than in former years when a large portion of the year's tonnage was rolled during the spring months. The new tonnage that is being booked from day to day is comparatively heavy and is rapidly going into consumption, judging from jobbers' stocks. The open weather is unusually favorable for the distribution of material and no doubt considerable tonnage is now coming to consumers that otherwise would have reached them later in the year. Quotations are unchanged as follows: $2 in car lots to jobbers and $2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mill.

Pittsburgh.—A fair amount of current business is being placed and with specifications on contracts taken by the mills before prices were advanced the mills are unusually busy for this season of the year and are making very heavy shipments. The buying for spring trade is expected to be exceptionally heavy. Prices are very firm, but unchanged. We quote Wire Nails at $1.85 in carloads to the large jobbing trade and $1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—Demand has been fairly well sustained, considering the season, though it has not been heavy. A continued scarcity of Steel is interfering with the operation of mills to some extent. It is understood that one of the conservative mills outside of the Cut Nail Association is unwilling to make any concessions on the regularly quoted carload price. The Cut Nail Association is holding a meeting to-day (Wednesday), but it is a question whether the manufacturers will consider it expedient to advance prices nearer to those of Wire Nails, although the scarcity and price of Steel might seem to justify it. Quotations are as follows: $1.75, base, for carload lots, f.o.b. Pittsburgh; $1.80 for less than carloads, f.o.b. Pittsburgh; $1.90 for carload lots, on dock, New York; $1.95 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—The local demand is moderate and prices are fairly well maintained. Quotations for small lots from store are on the basis of $1.95 to $2 per keg.

Chicago.—While the demand in this Western market

has fallen off, it is still greater than is usual at this season. Prices are unusually well maintained and jobbers report that Iron Nails are scarce on account of the inability of mills to secure raw material. Quotations are unchanged, as follows: Steel Cut Nails, in car lots, $1.90 to $1.95; less than car lots, $2; Iron Cut Nails, $2 to $2.05.

Pittsburgh.—The Cut Nail Association will hold a meeting to-morrow (Wednesday), and in view of the high prices and scarcity of Steel, together with the recent advance in Wire Nails, a slight advance in price of Cut Nails seems probable. Current orders are only of fair volume, but the mills have contracts on their books on which buyers are specifying very freely. Quotations are as follows: $1.75, base, for carload lots, f.o.b. Pittsburgh; $1.80 for less than carloads, f.o.b. Pittsburgh; $1.90 for carload lots, on dock, New York; $1.95 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

Barb Wire.—Specifications on contract orders are being received by the mills for early shipment. A fair amount of new business is also coming in from the jobbers. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$2.00	$2.30
Retailers, carload lots	2.05	2.35
Retailers, less than carload lots	2.15	2.45

Chicago.—Jobbers report a fairly large distribution considering the season and specifications that are reaching the mills for early shipments are heavier than is customary in the month of January. New business is also reaching the mills in fair volume, although jobbers generally contracted heavily before the recent advance. Quotations are firmly maintained as follows: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50. Retailers, less than car lots, Painted, $2.30; Galvanized, $2.60. Staples, Bright, in car lots, to jobbers, $2.10; Galvanized, $2.40; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Consumers are specifying very freely on contracts placed some time ago, while current business is fairly large. As soon as the weather settles and the roads dry up, permitting deliveries of Wire to farmers, it is expected that new demand will materially increase. Prices are firmly maintained as follows: Painted Barb Wire $2 and Galvanized $2.30 in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—Additional contract orders have been placed recently, while specifications are being freely received by the mills. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—Independent Fence manufacturers have been placing large contracts for their future requirements running well through the spring months, with Wire manufacturers during the past few days. Specifications on existing contracts continue heavy and both Fench manufacturers and other interests are anxiously taking out all of the material contracted for on the lower basis prevailing last year. Quotations are well maintained, as follows: To jobbers, $1.85, f.o.b. Chicago, in car lots, and car lots to retailers, $1.90.

Pittsburgh.—Specifications on contracts continue to come in very freely, and with a fair current demand shipments by the mills are heavier than at this season of the year. All indications point to an enormous demand for Fence Wire as soon as spring trade opens. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The above prices are for base numbers, 6 to 9.

Leather Belting.—The belting market will of course continue to be influenced by the prices of the raw material and some manufacturers are of the opinion that Leather has not yet reached its highest level. Other Belt manufacturers think that Leather will not advance much, if any, beyond the present figures. Belting manufacturers have generally been conservative in making advances in accordance with the course of the market for the raw material, which is referred to as higher than it has been for many years. The high prices of Leather are attributed to various causes, among which are the new demands for Leather, as for example, for automobile upholstering and automobile clothing, while at the same time the population of the country seems to be growing faster than the supply of cattle. It is pointed out that as the Western country is being divided into small farms and fenced in the supply of cattle is decreasing in proportion to the population. The following prices represent in a general way the Eastern market to the smaller trade:

Extra Heavy Short Lap	60 and 5 %
Regular Short Lap	60 and 10 and 5 %
Standard	70 %
Light Standard	70 and 5 %
Cut Leather Lacing	50 %
Leather Lacing Sides, per square foot	25c.

Door and Window Screens.—In our last issue some reference was made to the distribution points, 602 in number, throughout the United States, which have been established by the Continental Company, Detroit, Mich., which is handling the product of nearly all the Door and Window Screen factories. Further particulars in regard to this method of filling orders may be of interest. Each of the factories represented by the company has its own distribution points in order efficiently to serve the trade which this factory may have previously been selling. For instance, in Indiana the Wabash Screen Door Company has the following distribution points: Anderson, Columbus, Crawfordsville, Evansville, Fort Wayne, Frankfort, Indianapolis, Kokomo, Lafayette, Logansport, Marion, Muncie, New Albany, Richmond, Shelbyville, South Bend, Terre Haute, Vincennes and Wabash. Other factories may have the same or different points, the purpose being to serve the retail dealers of the entire country at the lowest possible cost for freight. The effect of the plan is that each one of the distribution points has some convenience, so far as orders for Screen Doors and Window Screens are concerned.

The different factories have different methods of distributing cars. Distribution points are not always and in effect are seldom jobbing points, but are railroad junction points. Sometimes a car will be shipped to a jobber's salesman, who will go to this point and attend to the reshipping of the various lots. Sometimes the goods are turned over to cartage companies, who do the reshipping. Oftentimes the car is sent to some local retail dealer who will attend to the distribution of the shipment.

While most of the company's factories have fairly good stocks on hand such an immense variety of sizes, patterns and finish is sold that a great many items have to be made up after the receipt of the retailers' specifications from the jobbers. As it is necessary for these cars to move forward in time to have the goods reach the distribution points and the retailer early enough for the season most of these cars must go forward in February, although the second and sometimes the third car may be made up later for some points.

In the Eastern and Central territory the carload minimum weight is 14,000 to 16,000 pounds. This enables the manufacturer to serve a great many more points than can be done in the West, where the carload minimum is 24,000 pounds. This condition is partially offset, however, by the fact that the Eastern trade uses fewer Screen Doors and a great many more Window Screens than the Western trade, the West using a great many heavy Screen Doors; also Window Screen Frames, which are packed solid "knock down," so that the cars are more easily made up. Some of the Western jobbers prefer to make

up their own distribution cars—that is, to have their own orders assembled in their own cars without including shipments for other jobbers.

Sewer Pipe.—The demand for Vitrified Sewer Pipe in the Eastern market is excellent. Orders are being received in large volume and manufacturers are taxed to make as prompt shipment as customers desire. For Standard Pipe and Fittings, 2 to 24 inch, in carload lots, prices for the various territories are as follows:

New England	68%
New York and New Jersey	71%
Maryland, Delaware and eastern Pennsylvania	75%
Western Pennsylvania and West Virginia	77%
Virginia	76%
Ohio, Michigan and Kentucky	77%
Indiana	77%

Chain.—Under date of January 23 the price of Coil Chain was advanced by the manufacturers 10 cents per 100 pounds. The following Western Standard Traces were advanced ½ cent per pair: 6½-8-3; 6½-8-2; 6½-6-3 and 6½-6-2. All other sizes were advanced 1 cent per pair.

Glaziers' Points.—Glaziers' Points are strengthening in sympathy with the advance in zinc and the general firmness and activity of other Hardware markets. Materially higher prices are being quoted.

Heavy Hammers.—Notwithstanding the increased cost of raw material and the general strength of Heavy goods, Heavy Hammers are still reported to be selling at low prices. Irregularity may be traced no less to lack of harmony in the association than to the influence of outside manufacturers.

Fly Killers.—Orders for Bigelow Fly Killers are now being placed in good volume and it would seem that this line is coming to occupy the position of a staple. Prices fixed by the manufacturers are given as 75 cents per dozen and $8 per gross.

Jack and Safety Chain.—As a natural result of the steady advances in raw material, considerably higher prices are reported on Brass and Iron Jack and Ladder Chain and also on Safety and Plumbers' Chain.

Tacks.—A somewhat firmer tone pervades the Tack market, and while low prices are still to be obtained on exceptionally good orders, several manufacturers are refusing to meet the extreme quotations which have been prevailing. Raw material is of course considerably higher, as in the case of other Hardware lines. An excellent volume of business is reported. The following discounts may be said to represent the market in a general way on fair sized orders: American Carpet, American Cut and Swedes Cut Tacks, 90 and 50 per cent.; Swedes Upholsterers', Gimp and Lace Tacks, 90, 50 and 10 per cent.; Finishing Nails, 70 and 10 per cent., and Clout Nails, 80 and 10 per cent.

Rope.—For the month of January demand has been very satisfactory to the manufacturers. It is understood that some factories have been run overtime to keep up with their orders. This, however, is the exception rather than the rule. The market is fairly well maintained and quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality Sisal, 8 cents per pound.

Linseed Oil.—Demand has been light, as buyers are quite well supplied for some time to come. There have been inquiries for futures, but crushers are reluctant to accept contract orders. Prices asked for outside lots are not much below the regular market and the quantity is not large. Prices remain unchanged, as follows: Out of town Raw, 42 to 43 cents; City Raw, 44 and 45 cents per gallon; Raw, Calcutta seed, 65 cents per gallon. Boiled Oil, 1 to 2 cents advance over Raw.

Spirits Turpentine.—The local market has been devoid of large transactions, but demand for small lots by the consuming trade has been steady. Prices remain unchanged. New York quotations are as follows, according to quantity: Oil Barrels, 67½ to 68 cents; Machine Made Barrels, 68 to 68½ cents per gallon.

Window Glass.—The market has stiffened somewhat as the result of the move to organize Glass manufacturers, but demand has not shown much of an increase. It is reported that those in charge of the work of obtaining the full membership required to perfect the formation of the proposed National Window Glass Company have sent papers to manufacturers for signatures, binding the signers to a fixed policy until December 31, 1911. It is understood that as a general thing the papers have not been signed and returned. It is possible that very little hand blown Glass may be in the market by that date. A report has recently appeared in the daily press that ten leading independent Glass manufacturing concerns in Pennsylvania and Indiana have purchased patents on a Glass making machine, and that the ten plants would be incorporated under the name of the United States Window Glass & Machine Company. Whether this report is reliable or not it indicates the trend in future Glass manufacture. It is also possible that comparatively few of the hand blown Glass manufacturers are in a financial position to put up the $300 per pot forfeiture. It is a well-known fact that Glass has been sold at a loss for some time and the weaker manufacturers ask for prompt remittances to meet their pay rolls. Recently a manufacturing concern who is able to continue business stated that if the market did not soon improve the plant would be shut down, as it did not care to continue doing business at a loss. These statements show the deplorable condition into which the Glass manufacturing industry has fallen. Locally trade is quiet and quotations remain unchanged, as follows: First three brackets, single, 90 and 20 per cent. discount; all other sizes, single and double thick, 90 and 10 per cent. discount. The price of Plate Glass, exceeding 10 square feet, has been advanced about 5 per cent. by the independent factories, the Pittsburgh Plate Glass Company co-operating on prices. This makes the advance effective throughout the United States.

W. & B. DOUGLAS.

IT was announced at the annual meeting of W. & B. Douglas, Middletown, Conn., January 22, that Edward C. Douglas, Middletown, had secured a controlling interest in the company, which had been held by Seth H. Butler. The result of the change in ownership was the election of a practically new Board of Directors, Seth H. Butler, George T. Meech, Dale D. Butler and William B. Douglas retiring from the board, which now consists of Henry M. Chase, New York, the only remaining member of the old board, and Frank A. Coles, Edward C. Douglas, James K. Guy and Joseph Merriman. The directors elected these officers: President and general manager, Henry M. Chase; treasurer and superintendent, Edward C. Douglas, and secretary Fred. E. Gibbons. Edward C. Douglas is a grandson of Benjamin Douglas, who, with his brother William, organized the pump business early in the last century and gave it the name which has become known everywhere that pumps are used.

BEALL BROS.

BEALL BROS., Alton, Ill., have lately erected a factory for the manufacture of High Grade Heavy Hammers, Railroad Picks, Track Tools, &c. Their discount sheet on these goods is now out and they are mailing it to their trade. A new catalogue is in the hands of the printer and will be out in a short time. This firm has been identified with the manufacture of steel goods for the past 50 or 60 years and its line is known far and wide. Orders are coming in rapidly for the new line although it has been exploited but little as yet, and indications point to a large business in this department. Beall Bros. also operate a large factory for making High Grade Miners' Tools and Miners' Supplies and also a Shovel works, the average output of which is 225 to 250 dozen a day.

Gordon & Uttwitz, Westboro, Mo., have been succeeded by O. S. Uttwitz.

COMING RETAIL HARDWARE CONVENTIONS.

The following conventions of Retail Hardware Associations will be held during February and March.

COLORADO RETAIL HARDWARE ASSOCIATION:
Fourth Annual Meeting at Denver, February 7 and 8. Headquarters, Adams Hotel. President, A. B. Meservey, Colorado Springs; secretary, Davis Barkley, Fort Collins.

WISCONSIN RETAIL HARDWARE ASSOCIATION:
Tenth Annual Meeting at Milwaukee, February 7 and 8. Headquarters and Exhibits at West Side Turn Hall. Membership 530, an increase of 75 since last meeting. President, Ralph Burtis, Oshkosh; secretary, C. A. Peck, Berlin.

PENNSYLVANIA RETAIL HARDWARE ASSOCIATION:
Fifth Annual Meeting at Williamsport, February 6, 7 and 8. President, George V. Thompson, Mt. Jewett; secretary, J. E. Digby, McKee's Rocks.

INDIANA RETAIL HARDWARE ASSOCIATION:
Seventh Annual Meeting at Indianapolis, February 14, 15 and 16. Headquarters and Exhibits at Tomlinson Hall. President, A. N. Shidler, South Bend; secretary, M. L. Corey, Argos.

NEBRASKA RETAIL HARDWARE ASSOCIATION:
Fifth Annual Meeting at Lincoln, February 13, 14 and 15. Membership 248, an increase of 75 since last meeting. President, Max Uhlig, Holdrege; secretary, Frank K. Barr, Lincoln.

IOWA RETAIL HARDWARE ASSOCIATION:
Eighth Annual Meeting at Des Moines, February 14, 15 and 16. Headquarters and Exhibits at Bush Block. President, H. S. Vincent, Fort Dodge; secretary, A. R. Sale, Mason City.

MISSOURI RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:
Eighth Annual Meeting at Kansas City, February 20 and 21. Headquarters at Coates House. President, Taylor Frier, Louisiana; secretary, Fred Neudorff, St. Joseph.

ILLINOIS RETAIL HARDWARE ASSOCIATION:
Eighth Annual Meeting at Chicago, February 20, 21 and 22. Headquarters and Exhibits at First Regiment Armory. President, Frank B. McKenney, Rockford; secretary, L. D. Nash, Elgin.

KENTUCKY RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:
Sixth Annual Meeting at Louisville, February 20, 21 and 22. Headquarters and Exhibits at Galt House. President, J. C. Frederick, Owensboro; secretary, John R. Sower, Frankfort.

NEW YORK STATE ASSOCIATION OF RETAIL HARDWARE DEALERS:
Fourth Annual Meeting at Binghamton, February 20, 21 and 22. Membership 250, an increase of 25 since last meeting. President, C. P. Sherwood, White Plains; secretary, J. B. Foley, Syracuse.

CONNECTICUT RETAIL HARDWARE ASSOCIATION:
Third Annual Meeting at New Haven, February 27 and 28. Membership 65, about two-thirds of the Hardware merchants of the State. President, Chas. G. Agard, Torrington; secretary, James De F. Phelps, Windsor Locks.

OHIO HARDWARE ASSOCIATION:
Twelfth Annual Meeting at Canton, February 27 and 28 and March 1. Headquarters and Exhibits at Auditorium Building. President, John F. Baker, Dayton; secretary, Frank A. Bare, Mansfield.

MINNESOTA RETAIL HARDWARE ASSOCIATION:
Tenth Annual Meeting at Minneapolis, February 28, March 1 and 2. Headquarters at Nicollet House. Membership 690, an increase of 45 since last meeting. President, A. T. Stebbins, Rochester; secretary, M. S. Mathews, Boston Block, Minneapolis.

NEW ENGLAND RETAIL HARDWARE ASSOCIATION:
Thirteenth Annual Meeting at Boston, March 1 and 2. Headquarters and Exhibits at Hotel Vendome. President, J. B. Hunter, Boston; secretary, F. Alexander Chandler, 36 Federal street, Boston.

CALIFORNIA STATE RETAIL HARDWARE ASSOCIATION:
Fifth Annual Meeting in March at San Francisco. President, H. C. Bennett, San Francisco; secretary, Henry Gracey, 235 Powell street, San Francisco.

NATIONAL RETAIL HARDWARE ASSOCIATION:
Annual Meeting at Chicago, March 20, 21 and 22. President, W. P. Bogardus, Mount Vernon, Ohio; secretary, M. L. Corey, Argos, Ind.

Convention Notes.

The members of the Kentucky Retail Hardware and Stove Dealers' Association are taking great interest in the approaching meeting at the Galt House, Louisville, February 20, 21 and 22, and a large proportion of them have indicated their intention of being present. The secretary is receiving many letters of inquiry concerning the convention from both manufacturers and merchants, the former with a view to securing space for exhibits. Quite a number of applications for membership are also reported. The honorary members, too, are manifesting much interest in the convention and have expressed their willingness to do anything they can toward making it a success.

The Ohio Hardware Association's convention at Canton, on February 27 and 28 and March 1, will have its proceedings enlivened by a military band, which has been chartered for the occasion. This feature will add much to the attractiveness of the meeting and will doubtless be appreciated by those present.

The Committee of Arrangements, A. W. Leib of Williamsport, chairman, in conjunction with Secretary J. E. Digby of McKee's Rocks, are striving to make the coming meeting of the Pennsylvania Retail Hardware Dealers' Association at Williamsport, February 7 and 8, the best in the history of the organization. A cordial invitation is extended to every Hardware merchant in the State to be present, whether a member or not, and co-operate in the good work upon which the association is engaged.

The Missouri Retail Hardware Association has decided to hold its annual convention at Kansas City instead of Hannibal, as heretofore announced. The headquarters will be at the Coates House. A railroad rate of one and a fifth fare on the certificate plan has been secured for those attending the meeting. The local committees are getting up an attractive programme of entertainment, and emphasis is laid on the fact that all Hardware merchants are cordially invited to come to the convention, whether affiliated with the association or not.

The headquarters of the New York State Association of Retail Hardware Dealers for their annual convention at Binghamton, February 20, 21 and 22, will be at the Hotel Bennett, the different sessions being held in the assembly room of the hotel. Arrangements are making for a convention of an exceptionally business-like character, and a representative attendance of the Hardwaremen of the State is looked for. Manufacturers and jobbers are reserving space for exhibits quite freely. A special railroad rate is being secured, which will be announced later.

The business of E. Rosholt, Edmore, N. D., has been incorporated as the Rosholt Hardware Company. The capital stock is $10,000 and the incorporators are: Thorman Rosholt, Edmore, N. D.; Julius Rosholt, Minneapolis, Minn.; and Jas. S. Rosholt, Hemidii, Minn. The company will operate a branch store at Hallock, Minn.

The entire stock of Karth Hardware Company, Ashland, Ohio, has been bought by S. L. Karth, who will add about February 1 an Implement room with a complete stock of Agricultural Implements.

HARDWARE MERCHANTS AND MANUFACTURERS' ASSOCIATION OF PHILADELPHIA.

THE twentieth annual banquet of the Hardware Merchants and Manufacturers' Association of Philadelphia, Pa., was held Tuesday evening, January 30, at the Bellevue-Stratford Hotel in that city. An informal reception by the officers of the association preceded the banquet, which was held in the Clover Room of the hotel. The speakers' and guests' table extended the entire length of the room, while the other participants occupied a number of smaller tables, seating ten each. Carnations and ferns predominated in the floral decoration, while souvenirs presented by the various manufacturers for distribution among those present added materially to the attractive appearance of the banquet tables. Thomas Devlin, late president of the association, led the march to the banquet room and later called upon Rev. J. R. Davies, D.D., who invoked the blessing.

The *menu* card was unique in design, having on the front cover a reproduction of a banquet as held in "Ye olden time," touched in water colors, together with the announcement "XXth Annual Banquet; Hardware Merchants and Manufacturers' Association, Bellevue-Stratford, January 30, 1906," in embossed gilt lettering, and contained in addition to the *menu* the list of toasts and speakers, the names of the committee in charge, together with a complete list of those participating. Suitable pages for autographs were also provided.

With coffee and cigars Thomas Devlin, the retiring president of the association, introduced the toastmaster, Paul Griffith, in a graceful and felicitous address, in which he expressed his appreciation of the honor conferred on him as president for two terms, the constitutional limit. John R. Griffith, the newly elected president, was unable to be present, owing to the illness of Mrs. Griffith. The following resolution was unanimously adopted:

Whereas, Thomas Devlin has served this association as its president for the last two years, giving freely of his time and talents to its welfare, be it

Resolved, That the heartfelt thanks of the Hardware Merchants and Manufacturers' Association be tendered to him for his successful conduct of its affairs, and that we, its members at this time of his retirement from office, all join in wishing him health, happiness and prosperity.

The Addresses.

The toastmaster then introduced Hon. John. Weaver, Mayor of Philadelphia, who responded to the toast "Civil Patriotism," and in an interesting address spoke largely of the late reform movement in the politics of the city and State. Civic Betterment, he said, stood for Civic Patriotism, and while great advancement had already been made in that direction it was the plan of the administration to even better the conditions now existing.

Charles W. Asbury responded to the toast "Common Honesty," in a most interesting address, which was listened to with close attention and with approval of the sentiments expressed.

The toast "Hardware in History" was responded to by Rev. John R. Davies, D.D. Dr. Davies treated his subject in the broad sense of the metal industry.

The toast "Opening of a Chestnut Bur" was responded to in a humorous vein by James H. Kennedy, editor of the *Hardware Dealers' Magazine*, while Mahlon H. Kline responded to the toast "Commercial Organizations," commenting on the success of commercial organizations generally. He urged the consolidation of the various local organizations representing the different trades and lines of business into a general organization for the betterment of all interested.

The banquet closed with the singing of "Auld Lang Syne." During the evening vocal selections were rendered by a male quartette composed of Paul Volkmann, Charles A. Huff, John C. McGausland and Frank W. Huff. Musical selections were also rendered by the Bellevue-Stratford orchestra, while interesting impersonations were given by Frank Conly.

Souvenirs

donated by the following manufacturers were distributed:

Germantown Tool Works, Hammers.
Russell & Erwin Mfg. Company, Bronze Letter Opener.
McCaffrey File Company, Export and Domestic Files, Manicure Files.
Corbin Cabinet Lock Company, Sleeve Buttons.
Liveright Bros., "Whizzer" Manicure Files.
Pike Mfg. Company, Sharpening Stone in miniature, Pike selling assortment box.
Stanley Rule & Level Company, Brace and Bits.
Fayette R. Plumb, Incorporated, nickeled Hammer Head Paper Weight.
Star Lock Works, miniature Padlocks.
North Bros. Mfg. Company, Yankee Screw Drivers.
Miller Lock Company, Padlocks.
Henry Disston & Sons, Spirit Levels and Screw Drivers.
Landers, Frary & Clark, Bread Mixers.

The committee of arrangements, to whom great credit was extended for perhaps the most entertaining and enjoyable banquet ever given by the association, was composed of Ed. S. Jackson, Harry C. Disston, Charles Z. Tryon, Henry C. Ghriskey, Walter C. Devlin and Joseph J. McCaffrey.

THE VAN WAGONER COMPANY.

THE VAN WAGONER COMPANY, Cleveland, Ohio, has concluded arrangements with the Lima Progressive Association, Lima, Ohio, an incorporated company composed of leading citizens, whereby it will remove to the latter city. The company manufactures Spring Hinges and Hardware Specialties and will add a very important and extensive line of staple Hardware to its present product. Arrangements will be made for suitable buildings and machinery to fully carry on the successful manufacture of its goods. The addition of the proposed line of goods will be an important factor in the enterprise. The company agrees to remove to Lima with a plant having a valuation of at least $60,000 and with a cash working capital of $20,000, and provide employment for 50 people at the start and for 200 people at the end of the second year. The association agrees, in consideration of the above, to give a certain plot of about 5 acres of land on one of the leading railroads, very conveniently situated, $15,000 toward the erection of factory buildings and $1000 toward defraying the expense of moving from Cleveland. The Van Wagoner Company has been developing an excellent line of goods in its Cleveland plant, and with the articles which are to be added and the favorable conditions at Lima it is believed that this will be a successful move.

TRADE ITEMS.

OWING to a constantly increasing business, the Clark-Rutka-Weaver Company, jobbers of Hardware at 38, 40, 42 and 44 South Ionia street, Grand Rapids, Mich., have found it necessary to increase their capital stock to $75,000, and have succeeded in making arrangements whereby they will occupy the storerooms and warehouses, about to be made vacant, formerly occupied by Clark-Jewell-Wells Company, in addition to the space it now occupies. This will give the company very much improved facilities for handling its stock and for making prompt shipments. There is no change made in the management or officers of the firm.

IN the Mop litigation between the Arcade Mfg. Company and Stover Mfg. Company, both of Freeport, Ill., which has extended over the past two or three years, the United States Circuit Court of Appeals has recently handed down a decision in favor of the Arcade Company. This decision confirms the one rendered by Judge Kohlsaat in the lower Circuit Court, August 17, 1904.

The Hoffman Hardware, Seed & Implement Company, Newport, Ky., has been incorporated under the laws of Kentucky with $10,000 capital. The incorporators are Henry Hoffman, Phil J. Veith and Walter Bennett. The company will conduct a wholesale and retail business.

Retail Dealers' Hardware and Implement Association of Texas.

THE eighth annual convention of the Retail Dealers' Hardware and Implement Association of Texas was held in Dallas, January 23, 24 and 25 in the auditorium of the Dallas Commercial Club. The association has a membership of about 400, of which a good proportion were

R. L. PENICK.

in attendance. The sessions were all of an interesting and instructive character, and the coming together was very much enjoyed by those who participated.

President S. L. Erwin, of Honey Grove, called the assemblage to order at 10.30 on the morning of the 23rd. Hon. Bryan T. Barry, mayor of the city, heartily welcomed the association to Dallas, a felicitous response being made on behalf of the members by J. R. Cole, of Sherman.

Harvester Committee's Report.

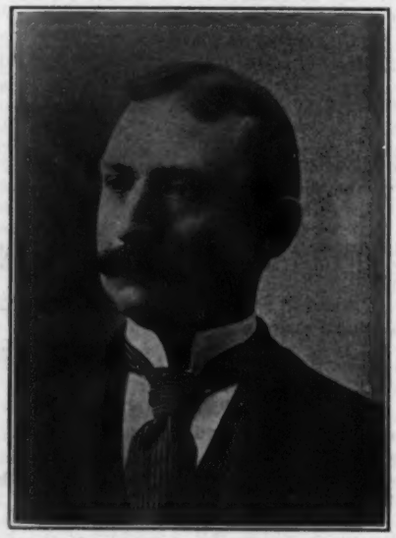
In his report as chairman of the Harvester Committee, R. L. Penick, vice-president of the association, said that very little had been accomplished during the year in the way of concessions from the International Harvester

S. L. ERWIN.

Company. After the appointment of the committee two years ago six concessions from the company were asked for. At last year's meeting it was reported that five of these concessions had been granted. The sixth, a more liberal commission on extras, has not been granted in spite of the most energetic efforts. Mr. Penick said that the present commission hardly met the express and freight charges, especially where agents were far from the market. A commission of at least 33 1-3 per cent., preferably 40 per cent., was desired. The report also recommended that the company do away with canvassers and make a proportionate reduction in the price of the machines. The company has agreed to rate all orders before the delivery of the machines where practicable.

Presidential Address.

In his interesting and able presidential address Mr. Erwin briefly sketched the early history of the association, the trials and vicissitudes encountered by it, and its development into a strong and influential organization. Mr. Erwin then referred to some of the questions deserving attention at the hands of the association. Among the most important was the formation of a mutual or reciprocal insurance company. While at first he had some serious misgivings as to the practicability of such a move, he had since come to the conclusion that an insurance organization, properly equipped and safeguarded so as to conform to the legal requirements of the State, was not only feasible, but was one of the best drawing cards for the association. He recommended careful consideration of catalogue house competition and the project for the



C. F. HUHLEIN.

establishment of a parcels post. Mr. Erwin continued, in part:

THE WARRANTY ON IMPLEMENTS,

vehicles and machinery commonly handled by the retail trade has had your consideration at former meetings, but since the National Association of Manufacturers at its recent meeting at Niagara Falls has practically met our views on this question, and to be sure we understand each other, as well as the resolutions adopted by them bearing on this important question, I believe it would be well to take this matter up and discuss it in open meeting, inviting all representatives of manufacturers present to give their views and understanding of the resolution agreed on by them, that misunderstanding may be avoided.

In this connection I want to respectfully suggest that inasmuch as the manufacturers have shown a disposition to meet our views along this line, by allowing free repairs as well as freight or express charges, that honesty and fairness compel us to demand only such repairs as are necessary to cure manifest defects or faulty material. Be just to those who show a disposition to do us right, preferring to offend a customer to wronging a manufacturer.

THERE SEEMS TO BE A GROWING DISPOSITION

on the part of jobbers and manufacturers to close in on the territory of the dealers until it is getting to a point in many sections where the trade on certain lines of implements is so curtailed and competition so sharp as to make it a question as to whether or not the trade in such

lines is any longer worth the while of some of our best dealers. I think jobbers and manufacturers have allowed themselves to encroach on the territory of their old dealers in a way that even they, themselves, have not realized. I believe this question should be justly and fairly discussed in a heart to heart talk with our friends, the gentlemen from whom we buy, and see if we cannot get them to be a little more generous in their disposition of territory.

DIRECT TO THE CONSUMER.

I believe a better understanding should be had with the jobber and manufacturer dealing direct with the consumer. In my candid opinion, there is but one remedy; that is—to quit it cold. I believe from the talks had with some of the jobbers, as a member of your Executive Committee, they are disposed to meet our views along this line. My notion is, jobbers and manufacturers can do more to uphold the retail trade by positively refusing to sell the consumer at all than in any other way.

At present, and in the past, if my information is correct, it is and has been a custom among them to encourage consumers while in Dallas to buy, even though they send a commission to their dealers. Now, my notion is, this should be flatly refused, unless the party buying will agree to have his purchases shipped to the dealer nearest his home, and thus show him he must patronize his home dealer.

Mr. Erwin brought his address to a close with a very warm tribute to Secretary-Treasurer McManus for the splendid manner in which he had performed his onerous duties.

Report of the Secretary-Treasurer.

J. W. McManus of Waxahachie presented his second annual report as secretary, from which we make the following extracts:

It gives much pleasure to the officers of this association to see so many present—men from various parts of different communities scattered throughout the State. You have thrown aside the burdens and business cares and come to this convention to work together for your own personal interest and the interest of the association in an effort to better the conditions of the business that is the choice of your life's work. The officers of this association feel that their work has not been lost, but that you as men have fully realized the importance of the mission of this organization, and have accordingly made use of the conditions that have been brought to bear in your business, proving of great benefit to you financially as well as socially, in making us feel in each other as brothers, burdened with the same cares, but willing to assist each other, to gather in the council chamber not to crush any organization or association, but to help others and protect the interest that belongs to us as men of business affairs and also as an association.

Allow me to say that in the efforts of your president the secretary has received much and valuable assistance, his words of counsel ever being words of wisdom, his good judgment being equal to every emergency and his willing hands and big heart as strong and generous as the principles upon which this association stands.

WE NOW HAVE FOUR HUNDRED MEMBERS ENROLLED,

and I am very sorry to say that the members have not paid the membership dues as they should have done, as will be fully explained to you in my report as treasurer, showing that we have not been able to collect sufficient money from the members to defray the expenses of the association in the past year, and your secretary has used his own money in order that the association may be kept on a business basis and alive. You fully understand that you cannot run your own business unless you collect from those who owe you for goods sold, and this organization stands upon the same basis. In this work you are given the advantage of the ideas of other men and the benefits of the combined efforts of the organization throughout this State in order that you may be placed in a position to dictate to others in place of being dictated to.

If we continue this work some plan must be adopted by which the membership dues will be paid; if not, we will in the course of a very short time be forced to the wall by not having funds sufficient to defray the actual expenses. It is a very small amount to be paid by each member and I feel sure that it is only a matter of negligence on the part of many as the reason that same has not been paid. I would suggest that some plan be adopted by which we can get on a financial basis and not be embarrassed financially, as we are and have been almost continually.

Law Taxing Useful Occupations.

On request of W. A. Spangler, the president read a copy of a letter which he had sent to the several candidates for the Democratic nomination for Governor, asking them unequivocally to define their attitude toward the proposed repeal of the law taxing useful occupations. Replies were read from C. K. Bell of Fort Worth, announcing his opposition to the repeal, and from Hon. O. B. Colquitt of Austin and M. M. Brooks of Austin, emphatically declaring in favor of the repeal. Others had failed to respond. The president intimated his intention of opposing the candidacy of those who refused to favor the proposed measure, which sentiment received hearty applause from the dealers present.

The Question of Warranty.

On the suggestion of the president the question of warranty was taken up and discussed in open session by manufacturers and dealers. Mr. Erwin invited C. F. Huhlein of F. B. Avery & Sons, Louisville, Ky., president of the National Association of Agricultural Implement and Vehicle Manufacturers, who was present, to favor the members with an expression of his views. Mr. Huhlein responded as follows:

Dealers as well as manufacturers have requested me to make a declaration here of a matter relating to defective parts. The resolution as adopted at the Niagara Falls convention differs somewhat from the resolution as first offered. It was amended and passed as follows:

"*Resolved*, That in case of defective parts, where it is clearly the fault of the manufacturer and where such parts have been inspected and approved by the dealer through whom sale was made, it is proper that the manufacturer should pay the freight or express charges on defective parts, when returned at the request of the manufacturer; also on the new parts to replace same, and that we recommend the adoption of this resolution by the National Association of Agricultural Implement and Vehicle Manufacturers."

Now it must be distinctly understood that the above is a mere recommendation. It cannot bind any one nor annul specific contracts of different tenor. The wagon makers have certain forms of warranty which experience dictates should apply in their business. Some buggies are sold without a warranty because their cheapness forbids giving any.

There was so much dissatisfaction with the whole matter that as a result of a conference between representatives of the dealers and manufacturers' associations at Kansas City last week the following resolution was agreed upon:

"*Resolved*, That it is the understanding of this committee that the resolutions adopted at the Niagara Falls convention of the National Association of Agricultural Implement and Vehicle Manufacturers, to the effect that it is proper that the transportation charges be paid by factory on defective parts and on new parts to replace them, only applies to such parts of machines, implements and vehicles as are covered by the warranties under which the goods were sold by the factories to the dealers."

In conclusion, I will request that each of you read and heed the analysis of this repairs matter as made by H. E. Miles, chairman of our Executive Committee, before the Kansas City convention last week. You must be very careful to protect the manufacturer against unjust claims, and the manufacturer will be just as careful to give you your dues.

Among others who spoke on this subject were Colonel Duke, president of the Dallas Implement, Machinery and Vehicle Club; G. E. Collins, Charles Hutchings and W. A. Spangler. It was finally decided, on motion of Secretary McManus, to refer the matter to a committee, which was instructed to bring in recommendations in the form of a resolution after a conference with a committee of the manufacturers.

Convention Committees.

The following convention committees were appointed by the president:

REGISTRATION.—A. B. Tabor.
MEMBERSHIP.—R. L. Penick, Stamford; J. D. Carroll, Quannah; Adolph Boidt, Houston.
AUDITING.—A. L. Smith, Hillsboro; Charles Hutchings, San Marcus; W. A. Spangler, Bonham.
NOMINATIONS.—J. Baker, Granbury; S. M. Kennerly, Gainesville; J. D. Carroll, Quannah.
RESOLUTIONS.—J. R. Cole, Sherman; J. C. Rugle, Mesquite; G. H. Collins, Greenville; J. H. Hancock, Paris; W. G. Lewis, Quannah.

Charles F. Huhlein's Address.

The feature of the Wednesday morning session was an address by Charles F. Huhlein, president of the National Association of Agricultural Implement and Vehicle Manufacturers. Mr. Huhlein's address was a most interesting and suggestive one and was listened to with the closest at-

tention. At its conclusion he was asked by a member as to how the implement and vehicle manufacturers stood on the catalogue house competition question. Mr. Huhlein responded as follows:

The National Association of Agricultural Implement and Vehicle Manufacturers believe emphatically that none of its members should sell a catalogue house. They are emphatically opposed to that means of doing business. We believe in standing by the legitimate dealer, and we are doing everything possible to see to it that through the legitimate dealer and through him only the goods made by our members are marketed. We are with you in every reasonable effort, any proper effort, that can be made to curtail and to combat catalogue house competition and to see to it that reliable regular dealers get reliable, regular goods and that nobody else gets them.

Reciprocal Insurance.

O. E. Schow, as chairman of the Committee on Reciprocal Insurance, made a report, from which we make the following extracts:

We recommend the plan, without changing, now in use by the Reciprocal Underwriters' Insurance Exchange of Kansas City, to be known as the Hardware and Implement Dealers' Mutual Exchange of Texas, with headquarters at Dallas, with the following change:

That we adopt a more conservative contract, or power of attorney, than is used by them; more adapted to our wants, yet positive enough to preserve the legal requirements of documents of this character and a membership in our association as a prerequisite for insurance. Sizes of the policies to be determined upon by a committee and reported to the convention and adopted at this meeting. Officers and compensation the same as now in use by the Reciprocal of Kansas City.

We also wish to call your attention to the fact that at our last annual meeting we, as an association, joined the Reciprocal Insurance Exchange of Kansas City, and we are sorry to report that only 15 members took insurance and accepted the extended offer. We now recommend not to withdraw from them at all, but first of all take out a policy with the home company and all you can get with the Reciprocal of Kansas City, who will be in working touch with the attorney and manager of our Texas company, and being identical with our own no good reasons exist why you should not accept this insurance, which is as safe as money and experienced men can make it.

Mr. Schow also presented a plan for forming the insurance organization, which, with the report, was referred for consideration to a committee of three appointed by the president.

The committee reported as follows:

Your committee to consider plans for providing members of this association with fire insurance beg to report that we have two plans under consideration, one by Ivan B. Erwin, providing for a regularly chartered mutual fire insurance company. As this plan requires a paid up capital of $100,000 it is in our opinion out of our reach at this time.

We consider the plan submitted by Mr. Schow practical and within the power of this association to put into successful operation, and recommend that the officers and directors of this association take the matter under consideration and take such action as they may deem best.

It was moved and carried that the report be received and referred to the Executive Committee and Board of Directors. Mr. Schow requested all the members who would agree to take policies of membership in the new fire insurance association to rise and come forward and subscribe their names. They did so, and about 25 names were enrolled, with a total of about $35,000 insurance. Mr. Schow suggested that a committee of three should be selected from among the policyholders as an advisory committee to serve with the insurance manager and attorney.

Subsequently Mr. Schow offered a resolution that the association send its manager and attorney to the Firemen's State Convention for the purpose of learning from them the best known method of fighting fire and bulletin this information to every member; also furnish a copy to the trade papers; also that the association delegate authority to the Executive Committee to designate and determine the size of policies to be written in the insurance exchange. The resolution was adopted.

Treasurer's Report.

Mr. McManus, as treasurer, reported receipts for the year, including the amount received for dues so far as the present convention, $1499.74. Disbursements to date, including some accounts held over from the previous annual session, were $1333.15, leaving a balance on hand of $166.59. He said that the amount expended did not cover anything to the secretary for salary, as provided by the association, and that he had received no compensation for his services to date, but had advanced money at times for the benefit of the association.

Freight Rates.

The report of the Committee on Freight Rates was as follows:

We, your Committee on Freight Rates, to whom was referred the proposition of finding a way if possible to reduce the freight rates on certain commodities, beg to report as follows:

We have taken up this matter with the General Freight Agents of certain railroads and discussed it with them carefully. A suggestion that was made to us and one which we think is of some value comes from a prominent railroad man. Take the Stove rate, for instance. We now pay 79 cents per 100 pounds on straight cars of Stoves or mixed cars of Stoves or Hollow Ware on a minimum of 25,000 pounds. His advice is that we ask for a minimum of 30,000 pounds straight Stoves at a rate of 60 to 64 cents. We find that the railroads do not encourage us to believe that they would be agreeable to lowering the rate and the minimum. However, there might be a proposition entertained of lowering the rate and raising the minimum on straight cars of Stoves. We advise the association to take steps to secure this change, which will be of great benefit to every member of the association.

We find that the present rates on Buggies are as follows: 36-foot car, 10,500 pounds minimum, $1.06; 40-foot car, 12,500 pounds minimum, 94 cents; 50-foot car, 22,000 pounds minimum, 79 cents. We all realize that these rates work against the interest of the smaller dealers, who are a majority in this association. When they buy a 36-foot carload of Buggies they are generally delivered to them in a 40 or 50 foot car and they have to pay for space in the car which they do not need.

The association should fight for a flat rate and a minimum of 12,500 pounds, regardless of the length of the car.

We, your committee, present the following resolution, which we hope the association will adopt:

Whereas, It has been demonstrated that the 79-cent rate on Stoves with a minimum of 25,000 pounds works an injury to the retail Hardware dealer; and

Whereas, The present rate on Buggies discriminates against the retail dealer and is an unfair advantage to the railroads; therefore, be it

Resolved, That the Retail Dealers' Hardware and Implement Association instructs its officers to take steps to have these rates changed as embodied in the report of your Committee on Freight Rates.

It was moved and carried that the report be received and that the association concur in the recommendations of the committee and adopt the resolutions presented.

Election of Officers.

The Committee on Nominations recommended the following persons, who were unanimously elected:

PRESIDENT, R. L. Penick, Stamford.
VICE-PRESIDENT, W. A. Spangler, Bonham.
DIRECTORS.—For three years: C. M. Patillo, Stamford; O. E. Schow, Clifton. For two years: J. R. Cole, Sherman.

The committee also recommended that the secretary-treasurer should receive a salary sufficient to compensate him for the heavy duties that rest upon him.

Report of Auditing Committee.

Mr. Spangler, for the Auditing Committee, stated that it had examined the books of the treasurer and found them correct. The committee suggested that a statement be prepared by the secretary in regard to members who were behind in dues, and that some plan be devised if possible for their collection; also that the names of delinquents be sent to members in good standing in the particular localities where the delinquents resided and that the members endeavor to secure the dues for the association, and also to induce the dealer to continue his membership. The report was adopted.

Increasing the Membership.

The question of means to be employed to increase the membership of the association was taken up and discussed at some length. D. B. McCall of Waxahachie moved that every traveling man selling Hardware, Agricultural Implements, Wind Mills, Vehicles, Machinery,

Paints and Stoves who covers Texas territory be invited to join the association. The motion was carried.

Mr. Bethell offered the following resolution:

Resolved, That the president of this association appoint a committee of three to formulate a letter to be mailed to each dealer eligible to membership, asking co-operation and to send his dues to the secretary of the association.

Resolved, That the minutes of this meeting be printed separate from our regular organ and mailed with letter named.

The resolution was adopted.

Standing Committees.

President-elect Penick announced the following standing committees for the ensuing year:

ADVISORY ON INSURANCE.—O. E. Schow, Clifton; Jess Baker, Granbury; W. A. Spangler, Bonham.

FREIGHT.—James R. Adams, Tyler; S. M. Kennerly, Gainesville; J. H. Hancock, Paris.

HARVESTER.—Chas. Smith, Belton; W. N. Jackson, Celina; C. M. Patillo, Stamford; Tom Shive, Vernon.

HEAVY HARDWARE AND PIPE FITTINGS.—James Armstead, Greenville; James R. Adams, Tyler; B. J. Williams, Grosebeck.

GRIEVANCE.—J. W. McManus, Waxahachie; D. B. McCall, Waxahachie; E. B. Prince, Waxahachie.

LEGISLATION.—D. L. Erwin, Honey Grove; W. A. Spangler, Bonham; W. H. Richardson, Austin; Jess Baker, Granbury.

WORKING UP MEMBERSHIP.—D. B. McCall, Waxahachie; B. P. Prince; J. W. McManus, Waxahachie.

Resolutions.

The report of the Committee on Resolutions was as follows:

Your Committee on Resolutions, to whom is referred matters touching the welfare of your association, begs leave to report that it has carefully considered the same, and herewith submits its report.

We are in hearty accord with the work wrought by the National Federation of Retail Dealers' Association. We cheerfully indorse the wisdom of closely and carefully centralizing all dealers in hardware, agricultural implements and vehicles of whatsoever kind, to the end that we may present an unbroken front to all adverse influences. The unfortunate relations heretofore existing between dealers and manufacturers in all lines, herein referred to, impel us to the conclusion that a closer alliance of these mutually dependent organizations should be had in all branches of the trade. Our past observation and experience are that the work wrought by the Retail Implement and Hardware Dealers' Association during 1905 is far greater in its accumulated efforts than in all its past history.

Whereas, The Retail Dealers' Hardware and Implement Association, after eight years of faithful labors, have the following important accomplishments to show for their efforts:

1. The elimination of the jobber branch retail house.
2. The defeating of local jobbers in their effort to deprive the dealer of the advantages of mixed car shipments.
3. The prevention of a general advance in insurance rates.
4. A more favorable consideration of the rights of dealers at the hands of manufacturers and jobbers.
5. A favorable settlement of the question of jobbers selling direct to consumer.
6. More satisfactory contracts with Harvesting Machinery companies.
7. The passage of the law repealing the occupation tax on merchants, which the present Governor vetoed.
8. The securing of an expression from each man now aspiring to be next Governor of Texas on the question of the occupation tax.
9. A promise from the Implement and Vehicle Association to adhere as far as possible to the regular dealers in the disposition of their products.
10. A relation between the dealers, jobbers and manufacturers which enables them to labor jointly for the common good of all concerned.
11. A plan by which all complaints of dealers against manufacturers and jobbers which the dealer himself is unable to settle may be handled effectively; therefore, be it

Resolved, That all retail Hardware and Implement dealers of Texas be invited to consider the above important accomplishments, and if not already a member of the association to at once become so, to the end that they may aid in the accomplishment of the following and much needed work:

1. The developing of effective methods of opposing trusts, so far as they encroach upon the rights of dealers.
2. The securing of lower insurance rates and the developing of the reciprocal plan of insurance.
3. The securing of a more favorable rate on machinery extras from the express companies.
4. To oppose the railroads in making rates which would redound solely to the benefit of the catalogue houses.
5. Securing an agreement from the manufacturers and jobbers not to publish prices.
6. To concentrate our effort in opposition to the parcels post law and the proposed numbering of rural route boxes.
7. To secure stop over privileges for cars in transit.

Referring to the above, we view with pleasure the action of many of the jobbers and manufacturers of our State in agreeing to confine their sales to legitimate sources. We would urge all members of our association to take notice of manufacturers and jobbers who are inclined to dispute the rights of dealers and act in every instance as their best interests would suggest.

The record of the Reciprocal Underwriters since its organization in lessening the cost of insurance to its policyholders should command the admiration of every member of this association. It is a fact worthy of notice that in many instances old line insurance companies have lowered their rates when brought into competition with the Reciprocal Underwriters, and in instances where losses have occurred in which both have suffered the Reciprocal Underwriters have as a rule been first to make settlement. With these facts before us we urge our members to give great consideration to the reciprocal plan of insurance.

On the question of express charges we are of the opinion that inasmuch as a very large portion of the business of the express companies during the harvest season is in the transportation of harvesters, committees, both State and national, be urged to use their best efforts to secure some consideration on the exorbitant rates now charged by the express companies.

On the matter of trusts, combines, it is the judgment of your committee that these gigantic corporations are entitled to just consideration at the hands of the merchants who buy and sell the products of their factories so long as the prices are consistent with the cost of production and so long as no embargo is laid on the merchants in the way of exclusive contracts, which in their nature would be prohibitive of free action on the part of buyers to enter the open market without offense to such trusts or combines.

The very gratifying success of our association to date is due almost solely to the untiring efforts of its officers, and many of the greatest hardships have been imposed by dealers who, through indifference to their interests, have failed in their duties to both officers and the association. If we could only eliminate that one almost common fault every victory to which we aspire would be in easy reach.

Faith and courage in things necessary knows no defeat. We concede the necessity, we must take on the faith and courage as a matter of course and march not always smoothly but certainly to our logical end.

For our retiring officers we wish many happy years of useful life, and indulge the hope that their changed relationship to our association will in no wise abate their interest in its perpetuity and ultimate glory of our association.

Resolved, That this association tender a vote of thanks to the Dallas Implement and Vehicle Club and other jobbers for their entertainment, to the Dallas Commercial Club for the use of the hall and other courtesies, to the Dallas *News* and other daily papers, to the trade papers for their reports and to the representative of the National Manufacturers' Association for his presence and able address, and also to the various railroads for special rates on account of the convention.

The report was adopted.

Parcels Post.

The following resolutions in regard to the Parcels Post bill now before Congress were adopted:

Your committee appointed to give expression in reference to the bill now before Congress known as the Parcels Post bill, beg leave to submit the following:

Here is the natural consequence and sequence of the passage of the parcels post iniquity:

First, a subsidy is granted to the retailing catalogue houses by the Post Office Department. Then the retail merchant is driven out of business or his business reduced to the sale of short profit staples needed for immediate use.

The jobber, having fewer retailers to sell to and nothing to sell them but heavy staples, will necessarily be eliminated.

The manufacturer will find himself compelled to sell his goods to the close buying catalogue houses, who will establish their own factories whenever they find it profitable to do so.

The traveling salesman, supplanted by the mail carrier, will find himself compelled to seek other fields for his talents, and the fields where he will fit will necessarily be limited.

The subsidized mail order retailers of the big cities will finally control the entire business of retailing and manufacturing.

Therefore, be it resolved:

1. That as members of the Retail Dealers' Hardware, Implement and Vehicle Association of Texas, representing under the National Federation 4000 members, we are bitterly opposed to the passage of said bill;

2. That our secretary be instructed to send a copy of these resolutions to each of our Senators and Congressmen, with a request that they use their best efforts to defeat the passage of the said bill;

3. That we request each member of this association promptly to write a personal letter to the Congressman in his district, urging the defeat of said Parcels Post bill, mailing a copy of same to our Senators, Hon. Joseph Bailey and Hon. C. A. Culberson.

Canes for Former Officers.

A resolution was adopted instructing the Executive Committee to forward, as a mark of appreciation of past services, to W. H. Richardson and James G. Blaine, for six years president and secretary, respectively, of the association, canes which it was hoped to present to them at the meeting, together with an expression of regret at their inability to attend.

Smoker.

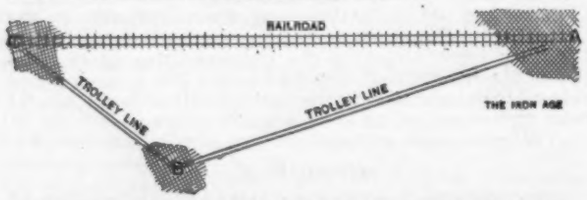
On Tuesday evening the smoker given by the Dallas Implement, Machinery and Vehicle Club at the Elks' Club was largely attended and was a highly enjoyable affair, from the Dutch lunch to the badger fight. An excellent orchestra furnished music, and with the lunch were served souvenir napkins on which was printed the evening's programme. A number of postprandial speeches were made which were interspersed with a vaudeville programme.

THE INVESTMENT OF DISPUTED TERRITORY.

To the Editor: I have read with much interest the pages of your publication describing Trade Winning Methods. There is, however, one subject which I have never seen directly alluded to in your columns. I refer to a merchant's campaigning for trade in a district which because of his location, or other cause, he may not naturally seem to cover, or, to express it in a military way, the investment of disputed territory. Your neighbors, because of some advantage in situation or facility for service, may consider that such territory belongs to them: dispute it!

ADVENT OF THE TROLLEY.

In a large city which I visit there has recently been developed a system of excellent suburban trolley service. The trolley is of course a recognized factor in merchandizing and usually operates to the detriment of suburban dealers in favor of the larger city merchants who with its assistance become competitors. About ten miles from the city mentioned, which for convenience we may style A, lies the village of B, and five miles further on the small city of C. C is on the line of the railroad running through A and about two years ago was also connected by an electric line which diverges to take in B. A sketch will make the situation entirely clear.



The completion of the trolley line was hailed as a great benefit for A, which, it was thought, would naturally fall heir to most of the trade in B and a large proportion of the trade in C, where those who had capital invested in the retail business found it hard work to take a cheerful view of the situation.

TAKING THE BULL BY THE HORNS.

There was a Hardware firm in C, however, which either because it was accustomed to handling cold, hard propositions or for some other reason, refused to read its doom in the time tables of the electric road or even to prepare for a contraction in its business. This firm evolved the original, not to say daring, theory that in order to transport all the consumers of C to A the traction company would have to run a few cars the other way—that is through B to C. The fare from C to B was 5 cents and from B to A 10 cents. Under the existing transportation laws might it not be expected that the charges would be the same both ways? If so, the consumer in B could save 5 cents each way or 10 cents a round trip, besides an hour's time, by doing his trading in C instead of A. If he didn't appreciate this it might be brought to his attention by certain legitimate means such as the use of printer's ink or the painting of a few bill board signs. The Hardware firm's reasoning was certainly attractive! Suppose it should act upon it, of course in a very cautious and conservative way?

PUBLICITY.

One of its members took a run down to B on his wheel, which was doubtless conservative as compared with hiring a horse and carriage and also afforded healthful exercise. He secured from the voting list, the postmaster's rural delivery list and all other available sources the names of the residents of B, referring them to one of the oldest inhabitants—a friend of his—for editing. By taking some pains with the list he prepared it to include nearly every soul in B who might fairly be expected to require a tin dipper or a few nails or a mowing machine occasionally, and none who might not; in other words a list on which no effort would be wasted.

With great labor, because it was new business, the firm then prepared an attractive circular referring to the opening of the trolley service to C—not A—as a gala occasion for the people of B and cordially inviting the recipient to take his first trip at the firm's expense. The circular called attention to the house as a retailer of the best of Hardware, House Furnishing Goods, Stoves, Paint, Sporting Goods, &c., at the lowest prices, and gave lists of seasonable goods at especially low figures. For enclosure with the circular a blank card was provided which when filled out by the recipient and presented in person at the store would entitle him to reimbursement of 10 cents covering the car fare for his initial trip according to the invitation. The circulars were mailed to the entire list, numbering over 300, three or four days before the opening of the line, and care was taken to give due publicity to the advertising scheme in the local daily paper as well as in the weekly paper of B. Printed matter was also prepared and distributed in C appealing to local pride and self-interest in patronizing the home store and urging other merchants to make it an object for B people to trade with them.

MORE THAN HALF THE CARDS CAME BACK.

Finally the store itself was given the most thorough overhauling, cleaned, freshened up with paint and varnish and some of the stock was rearranged with a view to the most attractive appearance. When the day of the trolley opening arrived the proprietors and their two clerks were almost too tired to put on their company manners, but they had something to show for their efforts. During the first week over half the cards sent out were presented for redemption, which in almost every case partially offset some purchase, small or large. The Hardwaremen suddenly jumped from comparative obscurity to be recognized as leaders in the mercantile activity of the town, while their aggressive policy was praised as public spirit and held up for the emulation of their neighbors.

NO LET UP.

That was about two years ago. The Hardware firm now employs five clerks and is working on the plans for a new and much larger building. Of course competition has developed from A, but instead of giving in without a fight the C house still holds the upper hand which it gained by its timely start. It has not made the mistake of relaxing after its first bound out of mediocrity, but has continued the enterprising methods to which it owes its increased prosperity. Of course it has been found necessary to sell certain lines of goods very low in order to meet the big city prices, but with a constantly increasing trade and a new confidence in themselves they have been able to order in larger quantities and secure close to bottom prices from manufacturers who were not slow to recognize their pluck and appreciate their future prospects as distributers. OBSERVER.

GEORGE BOOLE, vice-president and general manager of the Schwabacher Hardware Company, Seattle, Wash., has sold his interests in that concern and will retire from it on March 1. He has been associated with the house since 1889, prior to which he was connected with the Union Hardware & Metal Company, Los Angeles, and Dunham, Carrigan & Hayden Company, San Francisco, Cal. Mr. Boole is a Hardwareman of wide acquaintance in the trade and very favorably known for his experience, judgment and executive ability. He is succeeded in the management of Schwabacher Hardware Company by L. S. Schwabacher and F. S. Johnstone.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate.

FROM H. STORES & SON, Broughton, Ohio, whose Hardware, Stove, Implement and Paint store has been destroyed by fire. They expect to rebuild this summer.

FROM BEAULIEU & WHITE, Centralia, Ind. Ter., who have combined their Implement department with the Hardware business of E. Beaulieu.

FROM G. T. WHITE, Malvern, Iowa, who has bought the Hardware, Stove, Paint and Sporting Goods business of A. J. Kronsbein.

FROM YOUMANS & PRESTON, who are embarking in the Hardware, Stove, Paint and Sporting Goods business at Vancouver, Wash.

FROM CHAS. T. WILLS & Co., Parnassas, Pa., who are building an addition which, when completed, will give them a double store 50 x 125 feet in size.

FROM ALMOND HARDWARE COMPANY, Hurley, So. Dak., which has succeeded to the business of C. Hoefs & Co.

FROM AMLIE BROS. & Co., Benson, Minn., whose entire Hardware stock has been destroyed by fire.

FROM NORRIS & LOCKETT, Henderson, Ky., who handle Shelf and Heavy Hardware, Agricultural Implements, Sporting Goods and Harness.

FROM W. W. KINSER, Promise City, Iowa, who has taken over the business of D. C. Kinser.

FROM G. L. PIERSON, Rogers, Neb., who has purchased the Hardware, Stove, Paint and Sporting Goods business of G. E. Gless.

FROM S. C. SHAFFER, Jameson, Mo., who has bought the Hardware, Implement, Wagon and Harness business of W. T. Feurt.

FROM STEWART BROS., St. Clairsville, Ohio, who have bought the Hardware business formerly owned by D. H. McBride.

FROM NEWPORT & ROBERTS, who have opened a new Hardware and general store at Somerdale, Ohio.

FROM C. P. BIGLEY, Liberty Centre, Ohio, successor to the Hardware and Paint business of G. H. McLain.

FROM LEE-DUPREE HARDWARE COMPANY, Dunn, N. C., which has been incorporated with an authorized capital of $50,000 to conduct a wholesale business.

FROM CHAS. DAVIS & Co., Bonham, Texas, who have opened a branch Hardware and Implement house at Ravenna, Texas.

FROM HUNT & HUNT, Architects, 189 Montague street, Brooklyn, N. Y.

E. L. WALKER & Co., manufacturers of Handles, have taken new quarters at South Windham, Conn., removing their business from Eastford, Conn., where they have been manufacturing for four years. The change supplies the want of good shipping facilities, the new location being on the New York, New Haven & Hartford and the Central Vermont Railroads. The firm will make a specialty of Hickory Leather Capped Chisel Handles and Hammer Handles, and will also carry a complete stock of Ax, Pick, Sledge and Hatchet Handles in hickory and Ax Handles in oak.

SENECA CHAIN COMPANY.

DURING the past year the Seneca Chain Company, Kent, Ohio, has greatly increased its capacity. The company started in business about six years ago with 12 fires, and has increased its capacity from year to year, until now there are in daily operation 144 fires with full equipment for making Chain from No. 10 Wire to 3-inch stock. The total length of the plant is now 746 feet and over 300 hands are employed. The company has installed a new power plant consisting of 150 horse-power engine and 150 horse-power boiler, feed water heater and electric light plant; also a new Riehle Bros.' testing machine of 300,000 pounds capacity in the new hand made forge shop, in order to test the heavy Chains which are being made, in addition to the one already installed of 100,000 pounds capacity. A number of winding and cutting machines have also been put in, one of which will wind up to and including 1¼-inch stock, in addition to 18 power hammers which enable the company to turn out at the present time from 350 to 400 tons of Chain of all sizes per month. The plant is well located on three lines, the Wabash, Erie and Baltimore & Ohio, which gives ample shipping facilities. Being only 30 miles from the lakes also permits the company to ship a large portion of its product by water during the season when the lakes are open. The company has just been awarded through its New York branch, the Newhall Chain Forge & Iron Company, the contract by the Department of Commerce and Labor for Light Vessel Chain required by the Light House Department included in lot No. 3, bids for which were opened on November 21. The contract consists of some 400,000 pounds of High Grade Hand Forged Chain from 1¼ to 2 inches in size. The company is also working on a number of other Government orders. The success of this company is in very large measure due to the efforts of its secretary, C. M. Power.

VIRGINIA-CAROLINAS RETAIL HARDWARE ASSOCIATION.

WE are advised that there is a movement on foot among the leading Hardware merchants of North and South Carolina and Virginia to form a Hardware dealers' association covering that section of the country. It would seem that a strong and influential organization with perhaps 500 to 700 members might be formed in these three States. The association as projected would include the mutual fire insurance feature, which has contributed so much to the success of Hardware associations in other parts of the country.

It is estimated that such an association with the fire insurance appendix would keep within the States under consideration about $150,000 annually, which is now paid out in fire insurance premiums to foreign companies and save the members $50,000 yearly in premiums owing to the materially lower rates made possible through their own insurance company. It is expected by those behind the movement that a meeting for the purpose of giving the project definite form will be held at Greensboro, N. C., some time during next summer.

G. & H. BARNETT COMPANY.

G. & H. BARNETT COMPANY, Black Diamond File Works, Philadelphia, Pa., because of the unprecedented demand at home and abroad for its Black Diamond Files and Rasps, has found it impossible to keep pace with trade requirements without very largely increasing the capacity of its already extensive plant. Some months ago the management purchased considerable additional real estate adjoining the works, permitting the erection of a number of buildings in which to accommodate more machinery and the making of large additions to present buildings. These improvements and enlargements have been going on throughout the past year and have now been completed, resulting in a much larger daily production, which it is hoped will enable the company more promptly to fill orders. Notwithstanding this increased capacity the company is at the present time finding it difficult to keep up with the demands of the trade and is several weeks behind on orders.

EVOLUTION OF THE SAFETY RAZOR.

THE history of great enterprises often originates in a chance occurrence or accident; a something unnoticed by most individuals, but which nevertheless impresses the close observer. From such a circumstance was evolved the safety razor, as now known here and abroad. The old-time razor with a makeshift guard had been attempted, but so far as we are informed nothing resembling the present safety with 1½ x ¾-inch removable blade, held in a German silver frame and operated by means of a detachable center holder, had been thought of.

There were three Kampfe brothers, Frederick, Otto and Richard, expert machinists and tool makers, who had immigrated from Germany and established themselves at 114 Center street, New York, in the early '70s, where they made various kinds of dies, presses and tools, as well as developing and working out in tangible form experimental work for inventors and patentees. Some time before 1880 Frederick Kampfe, the oldest brother, while shaving himself with the customary form of razor cut himself, which, by the way, was a frequent occurrence on such occasions, and in a fit of anger threw the razor on the floor, with the remark that never again would he shave with such a razor if he had to go unshaven.

Picking Up the Discredited Blade,

however, when opportunity offered he proceeded to work out the problem of shaving safely by the inexpert. A portion of the blade was cut off and fitted into an improvised frame with which to operate it. Crude and primitive to a degree, he nevertheless recognized in it a practicable, workable tool, with which he safely shaved. Its fame gradually spread, locally, until a frequent inquiry was, Have you shaved with "Kampfe's rake," as it was dubbed. Despite its imperfections, considered from present standards, it continued to attract the curious in a limited circle, when a few were made for friends. The germ of the idea would neither "down" nor die, and so the fame of it spread, slowly but surely, the latent force of the contrivance sturdily resisting joke and jest and some razors being made for insistent customers. All this was before the patent was finally issued. As time elapsed the razor business became paramount with the Kampfes and after five or six years the manufacture of all other products was abandoned.

As a Merchantable Article

the manufacture of safety razors by Kampfe Brothers was established in 1881, the present time being the twenty-fifth or silver anniversary of the founding of the razor business. At first the product was sold in small quantities to the trade at $24 per dozen, wholesale. As indicative of the elementary character of the business then, no books were kept for recording sales. As the demand was always in excess of the supply, whenever a customer came in for safety razors, if he had the cash and they had the goods an exchange was made and the cash was dropped in a tin box kept for that purpose, the purchaser taking the goods away with him without an invoice. Usually he got about half the quantity wanted.

The buyer for a great Western wholesale hardware house tells a story on himself of how he walked into the place one day many years ago, told of the great buying capacity of his company, incidentally asked for a concession in price, and after finishing his remarks was told that his money was the same as other people's and they were unable to fill orders as it was. One day there came an order for a gross from Sault Ste. Marie, a remote northern point in Michigan. The three brothers looked from one to the other, silently, for a time and finally believing it to be some one's practical joke threw the order in the waste basket, thinking no more of it until about a week later there was received a letter asking why the goods had not been shipped or the order acknowledged.

From Such Humble, Primitive Beginnings

has the present important business in safety razors, strops, brushes, honing devices and allied goods, manufactured by Kampfe Brothers, 8-12 Reade street, New York, grown. Nothing save a tour of the various manufacturing departments in this extensive plant will give the average person an adequate idea of the care and minute attention to detail and supervision exercised in the production of the safety razor blade alone, regardless of the numerous interesting processes employed for the making of the frame, honing and stropping machines, diagonal and other strops, corn razors, folding brushes, etc., all of which are made in this plant, mainly by workmen trained in the shop from youth for their particular duties. Even the machinery and appliances used in large measure have been originated and built on the premises.

In the Production

of the safety razor blade the special steel is rolled to shape as it comes to them, cut to proper length and forged hot under a 1200-lb. hammer. Then follows various processes of preparatory grinding on different wheels, when the blades are annealed, after which each blade is treated on a special patented concaving machine. The next process is the stamping of "Kampfe Bros." in a power press. Then the three five-pointed stars under the half circle name are stamped on, one at a time, in a special machine, to insure accuracy of position. Next the backs are polished a little finer and "Kampfe Bros., N. Y., Warranted," rolled on by a machine for that purpose. After this the blades are hardened by a process which forces carbon into the steel, this being partially accomplished by the use of suitable chemicals in the furnace. The final hardening is given in an adjoining furnace, next to which is a barrel containing a chemical solution, kept uniformly at an even temperature.

Each blade is separately heated by means of gas and compressed air so as to obtain a uniform heat. The blades are now partially ground one at a time on the edge and tempered singly. The blade then goes to a machine invented for the purpose and made on the premises for grinding the blade while both sides of it are flooded with running water during the process, so that it is impossible to "burn" the blade and alter the temper. From now on the numerous finishing processes are all by hand, being too delicate in character for further machine work. The backs, sides and ends are ground singly on eight different wheels by almost as many workmen. Finally the edge and bevel of the cutting portion are put on, when the entire blade is polished over again on four different wheels varying in coarseness of grit. This grinding is done on stones of composite character manufactured by Kampfe Bros. in the factory under their own patents and from various ingredients.

The blades are now ready for honing, which is done on Belgian hones of two qualities. Each blade is then drawn across a piece of bass wood to remove any remaining wire edge and finally honed to a keen cutting edge and then stropped. After the various operations described every blade is critically inspected by an expert cutler and the blade is then ready for market. There are over thirty distinct operations on the blade alone. The stars appear frequently in the Kampfe productions, those on the various cylindrical holders being put on one at a time by another special machine as the metal blank is revolved on a mandrel. Tobin bronze is used instead of brass throughout. The Star safety razor is not only marketed in this country, but is shipped, we are told, to every civilized country on the globe.

JOHN H. GRAHAM & Co., 113 Chambers street, New York, are now the selling agents for the Scranton Whetstone & Abrasion Wheel Company, Scranton, Pa., not only for export but for Canada, the Pacific Coast and New England States as well. In an illustrated catalogue containing 63 pages are shown large lines of all kinds of Whetstones, Oil and Water Stones and Scythe Stones, quarried and manufactured by the company, the Washita and Arkansas stones being from its quarries at Hot Springs, Ark. A large new sample case containing various samples of the line has just been erected at the New York address of John H. Graham & Co.

The Proposed Catalogue of the Western Heavy Hardware Jobbers.

A Prominent Manufacturer's Views.

To the Editor: Your editorial in *The Iron Age* January 25 on "The Proposed Catalogue of the Western Heavy Hardware Jobbers," does justice to the same, and is in line with your conservative policy, and sounds early the "alarm" which manufacturers will certainly heed. The Heavy Hardware jobbers have gone so far beyond all bounds of reason that we believe the plan will never be put into force, or if it is will prove a boomerang.

CAN THESE JOBBERS,

even with the amount of monumental "gall" they have shown, imagine for a moment the scheme to be practical? It shows "graft" from start to finish and "graft" is repulsive to every honest citizen.

Imagine, if you please, that their plan is put into operation, the catalogue will show only one line, not complete lines, and will the manufacturer whose line is not represented—or boycotted—quietly pass all the business he formerly enjoyed in the territory covered by this association? If need be the manufacturer can and will go direct to the retailer, blacksmith or consumer, as he will not see his business decline, if he can honorably prevent it.

A great assistance to the manufacturer who would go direct to the retailer is the desire of the rank and file of the retailers to buy of manufacturers direct, even on an equal basis, if the quantities will warrant freight shipments, or the manufacturer will make deliveries.

"LEGITIMATE CHANNELS."

It may be cited that the association members have repeatedly gone on record as being in favor of goods being marketed through "legitimate channels"—*i. e.*, manufacturer to jobber, jobber to retailer, retailer to consumer, but bear in mind the retailer has been carefully guarded by the jobber, and it is quite necessary for the retailers, as an association, to show their appreciation of the jobbers' coaching, but individually many, yes very many, and even some of the association officers, are buying of factories direct goods they could obtain from the jobbers, and I personally know many more are trying to get on the manufacturers' lists, and some are ready to buy without a deferential price.

OWING TO THE UNFAIR DEMANDS

made by some jobbers and requests of others some manufacturers who in the past have refrained from selling the retail trade are seriously considering ignoring the jobbers entirely, others going still further and selling to consumers. The latter can profitably be done in many lines, as the goods can be delivered to the consumers at a lower price than now supplied to the consumer by the retailer and still net the manufacturer more than he is now getting from the jobber; for the jobber's and retailer's profit will more than pay the cost of transportation, but it means such a radical change in the manufacturer's business system of marketing his product that he is reluctant to make this change unless forced to do so.

THE SOUTHERN HARDWARE JOBBERS

were more modest in their proposed "hold up," they did not attempt to "sand bag" or "black list" the manufacturers as do their heavy hardware brethren. Their proposition was to adopt a uniform size of loose leaf catalogue, the manufacturers supplying the loose leaves (the Southern jobbers were willing to pay for their own covers), but even this was not practical, as the manufacturers did not feel warranted in getting up separate pages for every jobber, as hardly any two carry the same assortment of goods of a manufacturer making any considerable variety.

Take Saws, for instance—D8 in hand, panel and rip, with the various points, some 75, all different. Of single barrel guns one manufacturer quotes regularly in different patterns, gauges and lengths over 100, and so with hundreds of other lines, and there are hardly two buyers whose judgment would dictate that they order same items and sizes, and this is only one of the reasons why the manufacturer is obliged to make such a range of patterns.

Furthermore, one section of the country demands goods that are not salable in other sections. A catalogue compiled for the New England trade would be practically worthless in the Southern States, unless "made over" until it would not be recognized as the original New England edition.

WHO WOULD CONSIDER IT ADVISABLE

to use the same Heavy Hardware catalogue in the Dakotas as in Ohio or Missouri without changes? Do all the Heavy Hardware jobbers desire to carry the same assortment? Does the small jobber with two or three travelers on the road expect to carry as complete an assortment as does his larger competitor who has 50 or 60 travelers?

As a rule different sections, different classes of trade solicited, and buyers with widely different ideas demand catalogues as different as a novel is from a text book.

COERCION, GRAFT AND BOYCOTTS

are not on modern business lines and cannot succeed, and we predict the Heavy Hardware jobbers in their exultation in robbing the manufacturers unmasked will repent their rashness and reap no benefit therefrom.

If manufacturers submit to this unjust tax what will the next demand be?

A few years ago the labor unions demanded a nine-hour day without reduction of pay, and it was quite generally granted. To-day these same workmen are striking for an eight-hour day, no reduction of pay and closed shop and restricted output.

MANUFACTURERS AS A CLASS

are now between the unions on the one side demanding more pay for less production and the jobbers on the other, who, if the recent action of the Heavy Hardwaremen is a fair example, propose to relieve him of any legitimate profit he may make.

Every manufacturer should fight against this proposed genteel sand-bagging as vigorously as he would against a highway thug doing the same thing only in a different way.

ED. FORD.

From the Jobber's Standpoint.

To the Editor: The proposed catalogue scheme of the Western Heavy Hardware jobbers, discussed in your last issue, is interesting. You have outlined some of the serious objections to this plan.

It is not our desire to either take issue with you or to defend the proposed plan of the Heavy Hardware Jobbers' Association, but we do believe in fair play, and in these days unless a jobber "speaks out in meeting" his side of many of the trade questions that are being discussed is often overlooked, not to say ignored.

Some of the larger jobbers in the Hardware trade pursue the "solitary grandeur" idea. Like the Sphynx, they gaze far away into space, but the secret of their mysterious meditations lies wrapped in the depths of their own breasts.

Allow us to quote from your editorial as follows: "We direct attention to this effort because it is an application on a large scale and by a strong association of a principle which should not receive encouragement in the trade. The matter of payment by individual manufacturers to individual jobbers is objectionable enough, but when a concerted effort is made on these lines under the auspices of a formidable organization it is much more serious."

WE MAKE BOLD TO TAKE ISSUE

with you that the principle of manufacturers paying for representation in jobbers' catalogues is wrong. We claim it is nothing more nor less than advertising. We are quite sure you will agree with us that advertising is not wrong. If representation in a jobber's catalogue is advertising and if the principle of advertising itself is not wrong, then it resolves down to the question whether an advertisement in a jobber's catalogue is good advertising or not; in other words, whether it is profitable advertising.

We claim that the proper representation of a manufacturer's line of goods in a live jobber's catalogue is the best kind of advertising. We claim it is the most profitable class of advertising.

THE METHOD COMMONLY USED IN SELLING GOODS

in the hardware line is for the merchant to turn through the salesman's catalogue page by page. Probably 90 per cent. of the Hardware bought to-day from jobbers is purchased from illustrations of the goods in catalogues.

Take, for instance, a jobbing house represented by 150 salesmen. Each of these salesmen will turn through his catalogue, page by page, on an average with three merchants per day. If a manufacturer's line of goods is shown in this jobber's catalogue, then he has a certainty, in the case of this one house, that his line is brought to the attention of 450 merchants in good financial standing every working day in the week.

NOT ONLY DOES THE MERCHANT

see cuts and description of the manufacturer's goods in the catalogue, but this representation is reinforced by the favorable comments of the jobber's salesman. And not only that, the salesman is on the spot with his order book and pencil ready to take orders for the goods. He is surely more insistent than less insistent.

Besides this salesman quotes prices on the line, and the question of prices is discussed and settled by the salesman right at the time.

What advertising medium in the Hardware trade can compare with such advertising as this?

NOT ONLY DO THE JOBBERS WHO ADVERTISE

manufacturers' goods through their catalogues actually do the best kind of advertising, but these jobbers also place orders in addition to doing the advertising.

The pages of your own valuable magazine clearly indicate that most of the best manufacturers in the country believe in advertising. The fact that they also advertise in jobbers' catalogues does not seem to cut down your advertising. The manufacturers seem to be willing to spend their money in both kinds of advertising.

No jobber surely will complain of a manufacturer because he is advertising in trade papers. Then why in the name of fair play should a trade paper object to manufacturers advertising in a jobber's catalogue? When a manufacturer advertises in a trade paper it is all out-go, but when he advertises in a jobber's catalogue he has something substantial in return in the jobber's orders for his goods.

ONCE UPON A TIME

a manufacturer who makes only one article dropped into the writer's office and told of his efforts to introduce a new tool he was manufacturing. I suggested to him he not only continue to advertise in the trade papers, but that he have an excellent half-tone cut made of a full size tool, with full and complete description, and that he then ask each of the jobbers to whom he sold this tool to allow him to have a page printed on extra heavy glazed paper to be inserted in their loose-leaf catalogues.

This manufacturer followed my advice and he afterward took the trouble to write me a letter stating nothing he had ever done in the way of advertising had increased his sales like getting a full page in the jobbers' catalogues. I claim this was advertising pure and simple.

IF A MANUFACTURER IS WILLING

to appropriate a considerable sum of money every year for advertising, why should he not pay jobbers for the advertising in their catalogues if he finds it worth the money? Why should he not pay more to one jobber than to another, according to the number of this jobber's salesmen, catalogues and customers; also according to the amount of this jobber's purchases from him? Where is there anything wrong with the principle?

What about the thousands of mail orders that are made up from jobbers' catalogues for manufacturers' goods? In mail orders alone the manufacturer gets back his money.

THE WRITER IS OF THE OPINION

that if more manufacturers realized just how jobbers sell their goods, and the value of the right kind of advertising in some of the jobbers' catalogues, these manufacturers, instead of kicking against the pricks, would be devoting more attention to seeing that their goods were properly represented, with the right kinds of cuts and descriptions, in these jobbers' catalogues.

We of course are jobbers. We may be prejudiced. We have not called upon our friends among the manufacturers as much as some other jobbers to help us in issuing our catalogues. Nevertheless we cannot see anything wrong with the principle.

IT MUST BE REMEMBERED

after all that the manufacturer's cost of advertising is added to the cost of his goods, so the jobber pays for this advertising, the jobber passes it along to the retailer, and the retailer in the end puts it up to the consumer.

Let us repeat we do not think you have just grounds for taking the position that the principle involved in this question is wrong. There may be impositions in individual cases, and an association catalogue may fall of its own weight, but we believe that individual cases should be treated upon their individual merits, and that because of some abuses the whole system should not be condemned as being wrong in principle.

NORVELL-SHAPLEIGH HARDWARE COMPANY.

ST. LOUIS, MO., January 27, 1906.

The Catalogue Bacilli.

To the Editor: The article entitled "The Proposed Catalogue of the Western Heavy Hardware Jobbers," with the accompanying editorial in *The Iron Age* of January 25, serve to indicate in a measure the tenacity with which some of the wholesale houses still cling to the practice of forcing from manufacturers on one pretext or another voluntary *(sic.)* contributions to their trade literature that is as properly a part of the jobber's expense account for carrying on the business as the hiring of salesmen, their traveling expenses and numerous other expenditures.

Manufacturers frequently disburse large sums in the way of entertainment among their customers, from principals to stock clerks, but to be asked to pay for trade literature, which in many instances is regarded as valueless, has become more than an irritating annoyance and against it some concerted and vigorous action should be taken.

WHAT IS NEEDED

is the services of some business pathologist of the ability of Koch or Pasteur to discover and alienate the catalogue bacilli, study its origin and originate a serum or antitoxin that will kill the germ or render manufacturers immune. What aggravates the matter is the adroit way of insinuating what may happen to the line not shown at so much per page in the book. There are many jobbers, however, who not only do not solicit such "donations" but whose independence and self respect keep them from accepting contributions voluntarily offered.

Jobbers now do not make a practice of introducing and pushing new goods, but rather confine themselves to such lines as are well known, unless in some way the supply is controlled by them. The inherent weakness of the situation is the reluctance of individual manufacturers to make targets of themselves by refusing to be held up or appearing to be parsimonious.

ANTI-CATALOGUE.

IT is announced that Benjamin S. Alder Company, 37 Warren street, New York, has been appointed New York representative of O. P. Schriver & Co., manufacturers of I. X. L. Hardware Specialties, including Anti-Friction Casters, File and Tool Handles, Tool Sets, Galvanized Steel Chain Pumps, Tubing, Buckets, &c.

WILLIAMS & DANNAHER are starting a new Hardware brokerage business with headquarters at Nashville, Tenn. They have already secured a number of good accounts and will cover most of the Southern States regularly. Mr. Williams has been connected with jobbing interests in Nashville for several years and has recently been traveling for the Winchester Repeating Arms Company. Mr. Dannaher has long been associated with the Gray & Dudley Hardware Company, of Nashville.

MISCELLANEOUS NOTES.

Star Corundum Wheel Company.

Star Corundum Wheel Company, Detroit, Mich., has recently added to its products a full and complete line of Oil Stones, Knife Sharpeners, Razor Hones, &c. The Oil Stones are both combination and solid, furnished plain or mounted in iron boxes or wood cases. The company has issued a circular illustrating and listing this line and will soon have ready for distribution a catalogue showing all of its products.

Machinists' Fine Tools.

The Noonan Tool & Machine Works, Rome, N. Y., manufacturers of automobile tools and specialties, for which Stevens & Co., 99 Chambers street, New York, are selling agents, has put on the market a group of tools designed for automobilists in particular but as well suited to any workers in metals. They are made of high grade tool steel and finely tempered for the most exacting work, being sold in solid quantities or various assortments. The different articles are made in ⅛ to ⅜ inch diameter, 4 inches long, and ¼ to ⅜ inch stock in 6-inch lengths. In the ⅛-inch line are scribe, cold chisel, cape chisel and punch; in $^{3}/_{16}$-inch are a cold chisel, cape chisel and punch; in ¼-inch two punches, cape and half cape chisel and cold chisel; $^{5}/_{16}$-inch, one round and two half round chisels, one each diamond, drift, and round point chisels, one each center and prick punches, and two cold chisels; and in ⅜-inch diameters one each punch, rivet punch, set, and sheet metal chisel with ⅝-inch face, all of octagon stock. There are four assortments in number of tools, containing 25, 18, 10 and 10 articles each, put up in both slide cover wood boxes or leather cases with side flaps to roll. Another convenient tool for close cramped quarters is a curved and bent screw driver in 5, 6 and 8 inch sizes, entirely of steel. In this style there is a blade at each end of a tapered circular body bent at right angles with the plane of the tool and of different size blades. Still another convenient implement is a cotter pin tool with a curved point at one end to draw the pin out, and a flat curved blade at the other end to expand the two ends of the cotter when put in.

The Johnson Harvester Company.

The Johnson Harvester Company, Batavia, N. Y., is building its Continental binders for 1906 in four sizes—5, 6, 7 and 8 feet, the latter an entirely new size. A tongue truck has been added for this machine, to be used with the 7 and 8 foot sizes. Entirely new 3 and 4 horse equipments have been added, which are 50 per cent. lighter than the old ones and better in every way. In construction the binder attachment has been changed from chain drive to gear drive. To the company's disk cultivator a stalk cutter attachment has been added.

Steel Squares and Scales.

The Forsyth Mfg. Company, Buffalo, N. Y., has recently put on the market a line of rules and squares at very moderate cost. One is a square 12 inches long with 7-inch tongue, both blade and tongue being 1 inch wide. It is made of steel and the edges are machined, the surfaces being polished and full nickel plated over copper and buffed. There is also a rule or scale 1 inch wide made in 6 and 12 inch lengths and finished in the same way, the graduations for both square and scales being down to sixteenths. The square is intended for profitable retailing at 15 cents each and the scales at 10 cents each.

Yankee Drill Chuck.

The accompanying cuts illustrate the exterior and interior of a drill chuck the body of which is made of the best grade of machinery steel and the jaws of the best drill rod steel and not liable to break. It is designed for the hardest service and is referred to as holding drills tightly after long and continued use as well as when new, with the simple tightening by hand. It is especially adapted to light and rapid drilling where accuracy and tight or sure grip is required. The chuck is not affected,

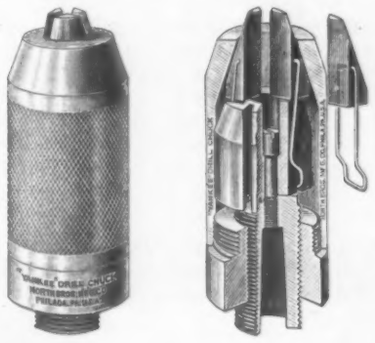


Fig. 1.—Yankee Drill Chuck.

it is explained, by dirt nor is it liable to get out of order through carelessness. The chuck is designed to meet the requirements in shops for a tool that will hold drills firmly and release them readily by hand and without the use of a key, spanner, &c. Arbors with ½-inch diameter shanks, as shown in Fig. 2, can be furnished to fit the chucks. The chucks are compact and small in diameter for their capacity and are made in three sizes. No. 1 is

Fig. 2.—Arbor for Yankee Chuck.

15-16 inch in diameter, 2⅞ inches extreme length, weighs 5½ ounces and holds 0-3-16-inch drills; No. 2 is 1 5-16 inches in diameter, 3 7-16 inches extreme length, weighs 13½ ounces and holds 0-5-16-inch drills; No. 3 is 1 9-16 inches in diameter, 4 inches extreme length, weighs 22½ ounces and holds 0-⅜-inch drills. The chucks are put on the market by North Bros. Mfg. Company of Philadelphia, Pa.

Pittsburgh Hose Connector.

Pittsburgh Hose Connector Company, Pittsburgh, Pa., is putting on the market the device shown in the accompanying illustrations. This is a hose connector with an

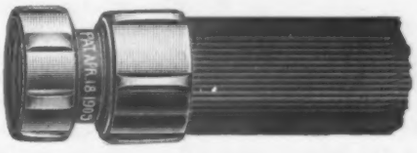


Fig. 1.—Pittsburgh Hose Connector, Connected.

adjustable sleeve, which holds the hose securely and affords a coupling that can be readily attached or removed with the fingers, requiring no clamp, band or wire fastening, and calling for the use of no tools. This connector is said to be adapted to air, steam, water or gas hose,

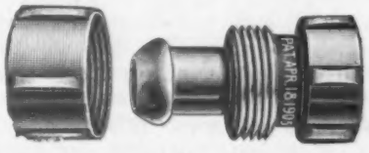


Fig. 2.—Pittsburgh Hose Connector, Disconnected.

being particularly effective for the prompt repair of breaks or leaky connections. It is especially recommended to manufacturers of automobiles.

The Irland Automatic Pipe Wrench.

The Irland Pipe Wrench Company, 15 Court square, Boston, Mass., is offering the one-handed wrench shown herewith. It consists of a tubular steel handle, a drop forged inserted jaw, a drop forged movable jaw, while confined in the handle is a tempered spring which is compressed by the use of the trigger to throw the jaw open. The rebound of the spring closes the jaw on the pipe or nut, so that the spring is at rest at all times except when the jaw is opened. The wrench is referred to as

The Irland Automatic Pipe Wrench.

made of the highest quality of steel, each part being interchangeable and all the rivets are a drive fit. It matters little, it is remarked, whether the work to be done is overhead, down in a ditch, under water, or elsewhere, as the wrench being strictly one handed the operator is enabled to reach at arm's length into places not possible with a wrench not a one-handed tool capable of being opened and closed at the point where the operator's hand would naturally grasp a wrench handle.

Winchester Repeating Rifle .22 Caliber, Model 1906.

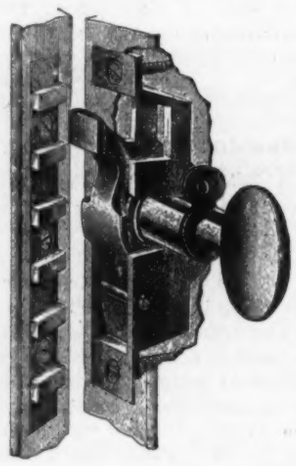
Winchester Repeating Arms Company, New Haven, Conn., is offering the .22 caliber 1906 model repeating rifle shown herewith. It is compact, light weight, take down, handling .22 caliber short rim fire cartridges only.

Winchester Repeating Rifle, .22 Caliber, Model 1906.

It is alluded to as attractive in appearance and outline; and in accuracy, reliability of operation and finish as fully up to the established Winchester standard. The repeating and take down systems used in the rifle, it is remarked, are simple, positive and thoroughly tried, having always given entire satisfaction. The rifle is made with a 20-inch round barrel, fitted with a sporting front sight and an adjustable open rear sight. It measures 35¾ inches over all, and weighs about 5 pounds. It has a handsome straight grip stock 12⅞ inches long, with a drop at comb of 1⅝ inches, and at heel 2⅜ inches, finished with a rubber butt plate. The magazine holds 15 cartridges. Model 1906 rifles can be furnished only according to the above description.

The Hubbard Window Sash Lock.

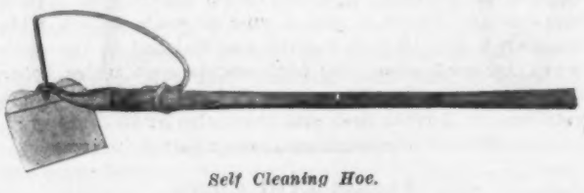
D. S. Hubbard, Son & Co., Bay Shore, Long Island, N. Y., are introducing the window sash lock shown in the accompanying illustration, which is cut away so as to display its construction. It is referred to as simple and durable, easily adjustable and as being adapted to buildings of all kinds. It is claimed to be burglar proof, antirattling and so arranged as to afford means for ventilation when desired. The lock is made of semisteel and is operated by a cam against the latch, which holds the sash in any position desired. The action of the cam on the lever presses it out of the lock, causing it to engage with an iron plate screwed to the sash, thus preventing the sash being moved up or down. At the same time the pressure that is put upon the sash prevents its rattling or shaking. The device is easily put in place, and in operating it is only necessary to turn the key, which will lock or unlock the sash as required. An automatic action is provided, so that if one should forget to turn the key and set the lever it will lock itself. It is explained that the lock can be mortised in the window frame on either side, high up or low down, and with the lock either side, in or out. The locks are made for one or two sash, with double locks for two-weighted sash or two single locks for two sash without weights for the same window. The locks being mortised in the side of the window frame leave the meeting rails free and clear to wash, paint or dust. For purposes of ventilation the sash can be raised an inch or more top and bottom and securely fastened, thus rendering the device of especial value for use in connection with sickrooms, schoolrooms, hospitals and in fact any place where ventilation is necessary. It is remarked that the lock cannot be seen nor opened from the outside and can only be opened from the inside with its own key, which can be removed and put away.



The Hubbard Window Sash Lock.

Self Cleaning Hoe.

The self cleaning hoe herewith illustrated is manufactured by the Rock River Mfg. Company, Dixon, Ill. It consists of the usual hoe blade and handle and a light blade which is supported so as to pass over the face of the hoe and clean it by simply turning the hoe upside down and striking the wire spring supporting the cleaner on the ground. This light blade is said to be well supported and perfectly adjusted and in passing over the face of the hoe to remove everything adhering to same.



Self Cleaning Hoe.

Hubbard Snaps.

The American Snap Company, Ashtabula, Ohio, for which J. N. Limeburner, 84-86 Chambers street, New York, is direct selling representative, has recently put out the "Can't Unhook" and "Bang Up" Hubbard patent harness snaps, as here shown. Fig. 1 is the Can't Unhook style, made for straps in 11 widths from ⅝ to 1¼ inclusive, increasing by eighths, and 1½, 1¾

Fig. 1.—Hubbard Can't Unhook Harness Snap.

and 2 inch widths. The maker offers them as of guaranteed genuine Nicobar steel and uniformly spring tempered. A wire extends downward from the tongue so that an animal cannot swing strap or chain in such a way as to unloose itself. Fig. 2 reproduces the Bang Up form, which is without the wire tongue guard and much lower in price, being made for straps in the same sizes as the Can't Unhook, the engraving showing a snap for rope with ¾-inch round eye. Both styles of snaps are made for both straps and rope in the same sizes in five finishes, the rope styles being ¾-inch diameter, in-

Fig. 2.—Hubbard Bang Up Harness Snap.

cluding nickel, brass and bronze plated, rubber finish and black enamel. The important distinguishing characteristics of these snaps are the protection against side motion, as the tongue is kept securely in the center; moderate cost and attractive appearance. They are packed in 1/12, ½ and 1 gross telescope boxes and in 10

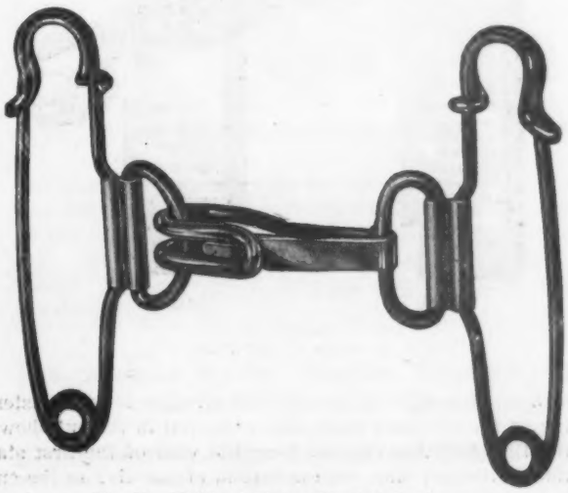
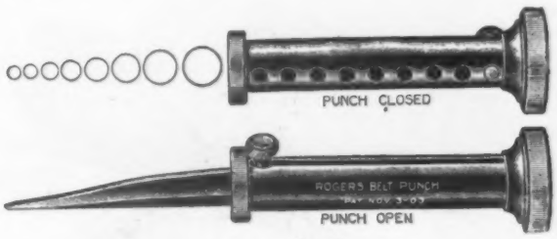


Fig. 3.—Hubbard Horse Blanket Fastener.

and 20 gross cases, according to size. Fig. 3 reproduces the Hubbard Always Ready horse blanket fastener, the actual size of which is 4 inches high and 5 inches long, using the Bang Up snap. The leading feature here, in addition to the snap, is the fact that the latter is attached to strong safety pins so that they can be readily put where wanted, in a great variety of positions and yet not be lost, thus giving a more elastic service than with permanent straps. This article is also made in the five finishes named and packed in ¼-gross telescope boxes.

The Rogers Belt Punch.

E. C. Atkins & Co., Indianapolis, Ind., are putting on the market the belt punch shown in the accompanying cut. In use the blade is extended to the size of hole desired, when it is pushed straight through the belt up to the handle, which is pressed firmly against the belt and given a half turn. This takes out the core of the



The Rogers Belt Punch.

size hole desired. To fasten the end of the lacing, after the belt is laced, the punch is pushed straight through the leather, which results in a half circle, forming a catch. By nicking the lacing after passing it through the opening the lacing, it is explained, cannot pull out, being held firm without making a knot. The blade of the punch is easily sharpened when it becomes dull, and when not in use is drawn back into the handle, which protects it. It is easily carried in the vest pocket and will cut any size hole from 1/16 to ⅜ inch, in canvas, rubber or the heaviest double leather oak tanned belting.

Breeze Funnel.

Stevens & Co., 99 Chambers street, New York, are now manufacturing the Breeze funnel, as owners of all patent rights, here shown. The funnel is designed for use in pouring gasoline into a tank and at the same time separating from it any dirt, grit or water that may have gotten into the supply. This is accomplished by means of a fine gauze strainer in the top of an intercepting tube, which fits snugly into the funnel tube, but which can be

Breeze Gasoline Funnel, with Strainer Tube.

instantly removed when desired. As the gasoline is poured into the funnel bowl any dirt, grit or water, being of a greater specific gravity than the volatile gasoline, settles around lower part of tube, the gasoline at the top flowing into the removable tube through the fine intercepting mesh and so into tank, when the refuse can be thrown out. The funnels are made in two patterns: No. 1 round, with bowl 7⅜ inches diameter and spun from one piece of copper. This funnel is designed principally for home or garage use, on account of shape. A No. 2, oval, made of sheet steel and copper plated, is 7¼ x 3¼ inches, and from its shaps can be readily carried on automobile, launch, &c. Either of the funnels can be used for other liquids by removing the inner tube.

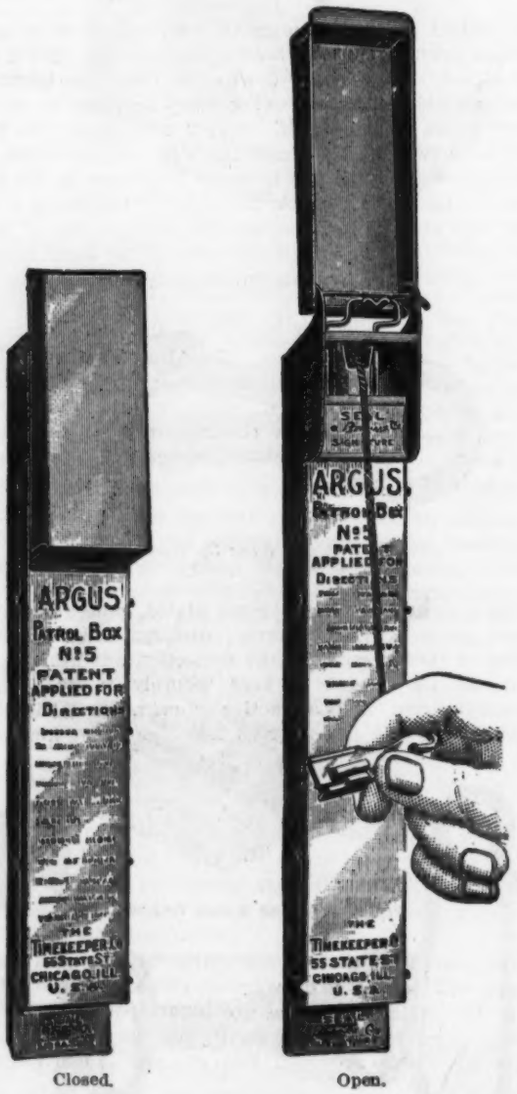
F. J. Eagen, Ridgway, Pa., has moved into a new building, where he will add to his plumbing business a line of Hardware and Tools.

Argus Watchman's Clock.

The Time Keeper Company, 55 State street, Chicago, Ill., is offering the Watchman's clock and patrol boxes shown in the accompanying cuts. The clock is of the portable type, the watchman carrying it from station to station. The watch is concealed in a leather pouch, carried about the body by a strap, the pouch having an opening for the insertion of the keys. The keys are fastened at the stations in a very novel and interesting manner. Small oblong boxes, shown in Fig. 2, about 2 inches

Fig. 1.—Argus Watchman's Clock.

wide and 13 inches long, are fastened by two ordinary flat headed screws at the various points the watchman is directed to visit. The screws are each covered with a little seal of gummed paper upon which the firm installing same places its signature and the date of installation. The seals are then covered with a coating of shellac or varnish so that they will not come off if moist. One of these seals is always in sight, while the other is partly concealed. If the seals were not over the screws the watchman might remove the boxes to some convenient point and register all the stations without making his rounds. Attached to the key is a chain known as foxtail, made of German silver, so that it will not corrode nor rust. For many years and even at the present time on portable watchman's clock keys a so-called safety chain similar to that known as plumbers' chain was and is in use. It was supposed that the watchman could not remove the keys from the chain without opening it at the further end, this further end being fastened or sealed up, but of late years watchmen have been tricky enough to learn the method of cutting parts of this chain with a fine hack saw and removing the keys, replacing the same in the morning before leaving the premises. Discovery of this weakness in the method of controlling watchmen was made by a member of this firm and he immediately set to work to devise another flexible substance to take the place of the safety chain. After testing prepared cords, ropes, leather, raw hide and many other things, cords of all kinds, made of wire and hemp, he discovered this flexible foxtail chain as being a safeguard that had lasting qualities, and then adopted it with success. This chain cannot be cut by the watchman. If it could be cut the chain would drop down to the bottom of the box, to which he has no access, and the key with a portion of the cut chain would remain in his hand. The chain could not be mended either without leaving positive evidence of the tampering with same, should he have any method of preventing the chain dropping down into the box. The further object of this upright box is that the key is always in a hanging position and covered. When the watchman visits the station he finds the key close to the top of the box, after lifting the cover of same. He pulls the key toward him until about a foot of the chain has been brought forward, the key is then inserted through the aperture in the leather pouch into the watch, and by a slight pressure the register is made by embossing a letter on the paper dial within the watch. A clicking noise announces to him that such a record has been perfected. There is within a movable matrix having three lines of letters, starting at A to Z, and then the numbers 1 and 2. Each line contains nine of these letters, making in all 27. The keys are provided with a cam to shift the matrix to its proper position to meet the male number upon the key; the paper dial lying between this male number and the matrix is continually revolving like the hands of a clock and as the key is pressed it moves the key in proper position to receive the character from the key into the matrix, thus embossing the station visited upon the dial. As, for instance, the watchman may visit station A at 6 o'clock, station B



Closed. Open.

Argus Patrol Box.

at 5 minutes after 6, station C 5 minutes later, registering on the traveling paper dial; the dial in the cut shows the time that has elapsed from the visit of the first station to the last one. At the bottom of the dial on the cut is seen that the watchman started at station C at about 20 minutes past 2, visiting station L, at the bottom of the word Universal, about 20 minutes past 3, so that it has taken him one hour to visit 26 stations. The general rule is not to use any particular word, but to use the letters A, B, C, and so on, to define the stations, unless otherwise ordered. The object of having a movable matrix is to make the watchman's clock as small as possible, with a large capacity of stations. A cutting device is employed

to register the opening and closing of the watch. The features of the device include the movable and sliding matrix with the cam arrangement for shifting same, the upright station box, which is a great improvement in this direction, closing itself automatically and therefore covering the key, which is always in a hanging position, and does not gather moisture or other substances, and the foxtail chain, making it absolutely tamper proof.

English and German Money Drawers.

The accompanying cuts represent money drawers put on the market by the Sun Mfg. Company, Columbus, Ohio. It is explained that the till shown in Fig. 1 is the standard one used in England and her colonies and

Fig. 1.—English Money Drawer No. 7.

that the one in Fig. 2 represents the standard used in Germany and her colonies. The drawers are similar in material and finish, both having fronts of solid white oak, golden polished finish, with dovetailed drawers and hard wood divisions in the bill tray of the German drawer. They have combination locks of five keys, susceptible of a number of changes. The English drawer is

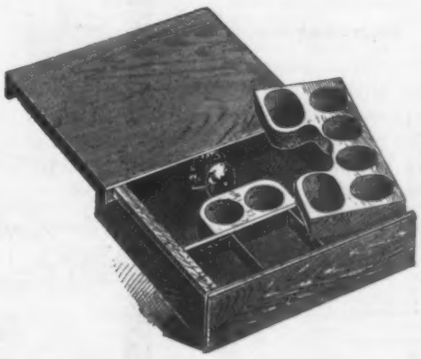
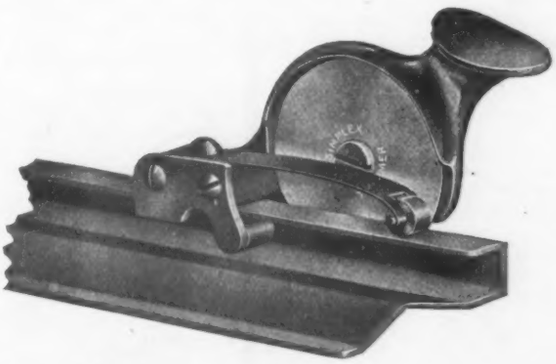


Fig. 2.—German Money Drawer No. 8.

furnished with silver toned cathedral gong and the German with bell. The drawers are alluded to as being made of the best material and are highly polished inside and out. They are made especially for the export trade, although we are informed they are also in demand among the domestic trade.

The Simplex Roller Bearing Trimmer with All Steel Straight Edge.

The Webster & Perks Tool Company, Springfield, Ohio, are just placing on the market a new roller bearing trimmer, mounted on an all steel straight edge, a rear view of which is shown in the accompanying cut. The trimmer is practically the same as the regular Simplex trimmer, which has been before the trade now about two years, except that it is full roller bearing, a roller being secured to the fulcrum plate engaging with the under side of the overhanging web of the all steel straight edge, thus reducing the friction of same on the straight edge when cutting to practically nothing, enabling the operator to manipulate it back and forth with scarcely an effort, and at the same time eliminating the wear of the trimmer on the straight edge. This construction also facilitates the employment of an all steel straight edge. The straight edge is made of one piece of bright cold rolled steel, formed to shape under immense pressure, and nickel plated on copper to prevent rusting. It is



The Simplex Roller Bearing Trimmer with All Steel Straight Edge.

stated that the straight edge is guaranteed to be absolutely true when it leaves the factory, will not be affected by climatic or atmospheric changes, and will forever maintain its trueness of edge barring unusual accidents.

The Neverslip Nail Puller.

Cedar Rapids Mfg. Company, Cedar Rapids, Iowa, is offering the nail puller shown herewith. One of the features of the puller is the hook, among the advantages of which the manufacturer claims the following: That where the hook is set it sticks, and the greater the pressure the harder it sticks, this being referred to as of vital importance in drawing nails from the extreme edges of boxes or the chines of barrels; that the hook acts as a raised fulcrum and results in pulling nails straight from

The Neverslip Nail Puller.

flat surfaces; that it permits the curve of a curved surface in packages as small as a nail keg to enter between it and the jaws of the puller, thus making it easier to pull nails from barrels and kegs than with an ordinary puller, as it never slips; and that the hook makes it possible to pull nails from aggravating corners and odd places. Another feature is the attractive rammer with an antipinching lip, which serves to push the fleshy part of the hand away, instead of permitting it to be pinched. The manufacturer states that a strictly high grade tool steel is used in the jaws and shank.

Imperial Compound Garage Pump.

The compound lever pump, shown in the accompanying cut, is so constructed that the air is first compressed in the large cylinder, the result being a large volume of air. This is again compressed in the small cylinder, the

Imperial Compound Garage Pump.

pressure thus becoming greater. At the same time the leverage also increases. The pump is offered by the Imperial Brass Mfg. Company, 245-247 Jefferson street, Chicago, Ill., who recommend it for use where pressure of from 50 to 200 pounds is desired.

Molly Stark Mop Wringer.

The Bennington Mop Wringer Company, Bennington, Vt., C. E. Peabody & Co., 155 Chambers street, New York, selling agents, has just brought out the patented Molly Stark mop wringer, here illustrated. It is constructed of malleable iron, japan finished. The outer dimensions are approximately 7 x 7 inches at top, 10 inches top to bottom, with a lever handle 14 inches long. The strong point of the wringer is the automatic adjustment it affords to unequal thicknesses of mop body, the pressure being equalized and entire mass squeezed to same condition of dryness. The handle is coupled to a movable jaw hinged at lowest point with slotted back and bottom in one casting, which in use is pushed forward against another jaw, 5½ x 6½ inches, hung on an axis. Thus in the process of squeezing the frame coupled to handle is forced forward against a swinging grate like section that from its very nature adjusts itself to inequalities. Both squeezing jaws have V-shaped vertical bars, one group of which is directly opposite the open spaces of the other jaw. The wringer may be secured to wood or metal pails instantly by means of two riveted eccentric clamps that adjust themselves readily to varying thicknesses of pails. There is an absence of wood and screws in the construction, while a pull on the lever handle accomplishes the entire operation at one stroke, the water from mop falling by gravity into the pail, not squirted outside. The wringers are packed in crates of twelve, weighing complete 90 pounds.

Molly Stark Mop Wringer, Attached to Pail.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal.
Linseed, City, raw	44 @45
Linseed, City, Boiled	45 @46
Linseed, State and West'n, raw	42 @43
Linseed, raw Calcutta seed	@65
Lard, Extra Prime, Winter	68 @69
Lard, Extra No. 1	48 @49
Lard, No. 1	38 @40
Cotton-seed, Crude, f.o.b. mills	25½@..
Cotton-seed, Summer Yellow, Prime	32½@32¾
Cotton-seed, Summer Yellow, off grades	@..
Sperm, Crude	48 @50
Sperm, Natural Spring	@..
Sperm, Bleached Spring	@..
Sperm, Natural Winter	61 @62
Sperm, Bleached Winter	64 @65
Tallow, Prime	51 @53
Whale, Crude	@..
Whale, Natural Winter	42 @44
Whale, Bleached Winter	44 @46
Menhaden, Brown, Strained	26 @29
Menhaden, Light, Strained	27 @30
Menhaden, Bleached, Winter	32 @33
Menhaden, Ex-Bld., Winter	34 @35
Menhaden, Southern	21 @22
Cocoanut, Ceylon ₱ lb	6½@ 6¾
Cocoanut, Cochin ₱ lb	7¼@ 7¾
Cod, Domestic, Prime	34 @35
Cod, Newfoundland	38½@40
Red, Elaine	30 @31
Red, Saponified ₱ lb	4¼@ 4¾
Olive, Italian, bbls	57 @62
Neatsfoot, prime	48 @49
Palm, Logos ₱ lb	6¼@ 6¼

Mineral Oils—

Black, 29 gravity, 25@30 cold test ₱ gal.	10½@11½
Black, 29 gravity, 15 cold test	11½@12½
Black, Summer	10½@11½
Cylinder, light filtered	18 @19
Cylinder, dark filtered	16 @17
Paraffine, 903-907 gravity	12¼@13
Paraffine, 903 gravity	11½@12
Paraffine, 883 gravity	9¼@ 9½
Paraffine, Red	11½@13

In small lots ½¢ advance.

Miscellaneous—

Barytes:	
White, Foreign ₱ ton	$17.50@19.00
Amer. floated ₱ ton	18.00@19.00
Off color, No. 2 ₱ ton	15.00@15.00
Chalk, in bulk ₱ ton	3.50@ 3.75
Chalk, in bbls. ₱ 100 lb	....@ .40
China Clay, English ₱ ton	11.00@17.00
Cobalt, Oxide ₱ 100 lb	2.50@ 2.60
Whiting, Common ₱ 100 lb	.43@ .48
Whiting, Gilders ₱ 100 lb	.50@ .55
Whiting, Ex. Gilders ₱ 100 lb	.55@ .60

Putty, Commercial—₱ 100 lb

In bladders	$1.65 @1.85
In bbls. or tubs	1.15 @1.35
In 1 lb to 5 lb cans	2.60 @2.90
In 12½ to 50 lb cans	1.45 @1.85

Spirits Turpentine—₱ gal.

In Oil bbls	68 @68½
In machine bbls	68½@69

Glue—

	₱ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	18 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	₱ lb
Bleached Commercial	38 @39
Bone Dried	48 @49
Button	40 @45
Diamond I	@55
Fine Orange	46 @50
A. C. Garnet	43 @..
D. C.	40 @..
Octagon B	@52
T. N.	42 @45
V. S. O.	54 @55

Colors in Oil—

	₱ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	10 @15
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	₱ lb
Lead, English white, in Oil	9½@ 9¾
Lead, American white, in Oil:	
Lots of 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
In Barrels	@ 6¾
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1½

Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	₱ lb
Lead, White, Dry, in bbls	@ 6¾
Zinc, American, dry	4¾@ 5
Zinc, French:	
Paris, Red Seal, dry	9½
Paris, Green Seal, dry	10¾
Antwerp, Red Seal, dry	8¾
Antwerp, Green Seal, dry	10
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	12¾@13¾
Lots of less than 1 ton	13¼@13¾
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11¾@12¼
Lots of less than 1 ton	11¾@12¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades. 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	₱ lb
Black, Carbon	5 @10
Black, Drop, American	4 @ 6
Black, Drop, English	5 @15
Black, Ivory	16 @20
Lamp, Com	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.50@3.60
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over	@ 7¼
Lots less than 500 lb	@ 7¾
Litharge, American, bbls	@ 7¼
Ocher, American ₱ ton	$8.50@16.00
Ocher, American Golden	2½@ 3½
Ocher, French	1¼@ 2½
Ocher, Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
Orange Mineral, French	10¾@12¼
Orange, Mineral, German	8½@10
Orange, Mineral, American	8½@ 8¾
Red, Indian, English	4½@ 8½
Red, Indian, American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer. ₱ 100 lb	$0.50@1.25
Red Venetian, English, 100 lb	$1.15@1.75
Sienna, Italian, Burnt and Powdered	3 @ 9½
Sienna, Ital., Raw, Powd	3 @ 6½
Sienna, American, Raw	1½@ 2
Sienna, American, Burnt and Powdered	1½@ 2
Talc, French ₱ ton	$15.00@30.00
Talc, American ₱ ton	15.00@25.00
Terra Alba, French ₱ 100 lb	90 @1.60
Terra Alba, English ₱ 100 lb	90 @1.00
Terra Alba, American, ₱ 100 lb, No. 1	70 @80
Terra Alba, American, ₱ 100 lb, No. 2	60 @65
Umber, Turkey, Bnt. & Pow	2½@ 3½
Umber, Turkey, Raw & Pow	2½@ 3½
Umber, Burnt, Amer	1½@ 2
Umber, Raw, Amer	1½@ 2
Yellow Chrome	12 @14
Vermilion, American Lead	10 @25
Vermilion, Quicksilver, bulk	@65
Vermilion, Quicksilver, bags	@68
Vermilion, English, Import	75 @80
Vermilion, Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....℔ lb 6¾@7 ¢
Hay-Budden, Wrought.....9@9¼ ¢
Horseshoe brand, Wrought.....9@9¼ ¢
Trenton .....℔ lb 9@9¼ ¢

Imported—
Peter Wright & Sons.....℔ lb 10½ ¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....75@75&5%
Jennings' Patn., reg. finish.... 50&10@60%
Black Lip or Blued.....60&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18.....65%
Ford's, Clark's Pattern.....60&5%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames .....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ship Augers.....45&5&@60%
Ford's .....33⅓@5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's.....45%

Awl Hafts— See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered..gro.65@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. $1@$1.4¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights:
First Quality.....$6.75
Second Quality.....$6.25
Double Bit, base weights:
First Quality.....$9.00
Second Quality.....$8.50

Axle Grease—
See *Grease, Axle*

Axles— *Iron or Steel*
Concord, Loose Collar...4¼@4¾¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose...3¼@3¾¢
No. 1½ Com., New Style3¾@4¼¢
No. 2 Solid Collar.....4@4½¢
Half Patent:
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18...75&10@75&10&5%
Nos. 19 to 22...75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb..4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb. 8½@9¢

Bait— Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 3@3¼¢

Towel
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—
Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $3.00
No. 3 Perfection Dust.....℔ gro. $6.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned....℔ doz. $1.20
Holt, No. 1, Tinned.....℔ doz. $1.50
Holt, No. B, Japanned....℔ doz. $2.00
Holt, No. 2, Tinned.....℔ doz. $2.25
Lyon, No. 2, Japanned....℔ doz. $1.25
Lyon, No. 3, Japanned....℔ doz. $1.50
Taplin Mfg. Co.:.....℔ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd..$17.00
No. 200 Imp'd Dover Tumbler....$8.50
No. 202 Imp'd Dover Tumbler, T'd..$9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (R. M. W. Co.).℔ gro. net, $6.00

Bellows—
Blacksmith, Standard List.. 60&10@70&10%

Hand—
Inch..	6	7	8	9	10
Doz...	$4.75	5.70	6.65	7.60	8.85

Molders—
Inch..	9	10	11	12	14
Doz...	$8.00	9.00	10.50	12.50	14.50

Net Prices.

Bells— Cow—
Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished Brass.60&10%
White Metal.....60%
Nickel Plated.....50&10&60%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 2¼ ¢
Steel Alloy Church and School 50&10@60%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting— Leather—
Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard 70%
Light Standard.....70&5%
Cut Leather Lacing.....50&5%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....60&5@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden.....70&10@75%
Hartz St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty. Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c...30&10@40&10%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....23⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread): ⅜ x 6 and smaller.....75@—%
Larger and Longer..65&5@—%
Phila. Eagle $3.00 list May 24, '99 80%
Bolt Ends, list Feb. 14, '95.... 65&10@—%
Machine, ⅜ x 4 and smaller 75@—%
Machine, larger and longer.. 65&5@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch.....	3	4	5	6	8
Per doz.	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:
Inch.....	6	8	10
Per doz.....	$1.20	1.50	2.25

Cast Iron Chain, Flat Japanned:
Inch.....	6	8	10
Per doz.....	$1.00	1.40	1.65

Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch.....	6	8	10
Per doz.....	$0.75	.95	1.25

Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck.....75@75&10%
Wrt Square.66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Plow and Stove—
Plow .....65&10&10@70%
Stove .....87½&10@—

Tire—
Norway Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:
Inch.....	1¼	1½	1¾	2
Per doz...	$4.80	5.60	6.40	8.00
Inch			2¼	2½
Per doz.....			$8.65	11.50

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection 40%
Seavey 33⅓%
Stanley R. & L. Co.:
Nos. 240 to 460.....30%
Nos. 50 and 60.....35%

Braces—
Common Ball American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 211 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—
Wrought Steel...80&10@80&10&5%
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.
Quart.....	10	12	14
Water, Regular...	1.40	1.70	1.90
Water, Heavy.....	3.40	3.70	3.80
Fire, Rd. Bottom..	2.30	2.55	2.95
Well	2.55	2.87	3.15

Bucks, Saw—
Hoosier.....℔ gro. $36.00

Bull Rings—See *Rings, Bull*

Butts— Brass—
Wrought, list, Sept., '96.15@—%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—
Table and Back Flaps...75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70&10%
Loose Pin, Ball and Steeple Tip 85%
Japanned Ball Tip Butts... 70&10%
Bronzed, Wrt., Nar. and Inside Blind Butts....65&10%

Ex. 10&10&10@10&10&10&10%

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
300, 500, 600 and 900 series.....60&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—
Blunt, 1 prong.....per lb. $4¼ ¢
Sharp, 1 prong...per lb. $4.60@5¢
Burke's Blunt.....4@4¼ ¢
Burke's Sharp.....4¼@4⅝ ¢
Gantier, Blunt.....4@4¼ ¢
Gantier Sharp.....4½@4¾ ¢

Perkins', Blunt Toe.....⅌ lb 3.65¢
Perkins', Sharp Toe.....⅌ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—
Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—
Eley's E. B......52@55¢
G. D......*per M* 34@35¢
F. L......*per M* 40@42¢
G. E......*per M* 48@50¢
Musket.....*per M* 62@63¢

Primers—
Berdan Primers, $2 per M...80%
B. L. Caps (Sturtevant Shells) $2 per M.....80%
All other primers per M.$1.52@1.60

Cartridges—
Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd.$1.90
B. B. Caps, Round Ball....*$1.49*
Central Fire.....85%
Target and Sporting Rifle..15&5%
*Primed Shells and Bullets.*15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—
Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	9-16
$8.60	5.80	4.85	4.10	3.95	3.85	3.80
⅝	¾	⅞ to 1	1⅛ to 1¼ inch.			
$3.75	3.60	3.55	3.70			

German Coil.....60&10&10@70%

Halter—
Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 24, '97.....60&10&10%
Covert Mfg. Co.
Halter.....35&5%
Covert's Saddlery Works
Halter.....70%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6¼—6-3, Str'ght, with ring.*$25.50*
6½—6-2, Str'ght, with ring.*$25.50*
6½—8-2, Str'ght, with ring.*$29.50*
6½—10-2, Str'ght, with ring.*$34.00*

NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Eastern Standard Traces, Wagon Chain, &c......60&10%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron.....60&10&5@70%
Brass.....60&10@60&10&10%
Safety Chain.....75@75&10%
Gal. Pump Chain.....*lb.* 4@4½%
Covert Mfg. Co.:
Breast.....40%
Halter.....40%
Heel.....40%
Rein.....40%
Stallion.....40%
Covert Sad. Works:
Breast.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Dog Leads and Kennel Chains.....40@10&5%
Niagara Dog Leads and Kennel Chains.....45@60&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

Chain and Ribbon, Sash—
Oneida Community:
Copper Chain.....60&5%
Steel Chain.....60%
Pullman:
Bronze Chain.....60%
Steel Chain.....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft.....$1.25@3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)
Carpenters' Blue.....*gro.* 38@40¢
Carpenters' Red.....*gro.* 33@35¢
Carpenters' White....*gro.* 28@30¢
See also Crayons.

Checks, Door—
Bardsley's.....45%
Eclipse.....60&10%
Pullman, per gro.....$54.00
Russwin.....40%

Chests, Tool—
American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—
Socket Framing and Firmer
Standard List.....75@75&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60%
C. E. Jennings & Co. Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
L. & I. J. White.....30@30&5%
L. & I. J. White, Tanged.....25&5%

Tanged—
Tanged Firmers.....33 1-3@40%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%

Cold—
lb.
Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—
Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck....35%
Beach Pat., each $8.00.....35&5%
Empire.....25%
Blacksmiths'.....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....45%
Drill Chuck, Skinner Pat. all sizes.35%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co.....40&10@50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Wood Workers, Hammers'.....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—
Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—
Star Socket, All Steel..⅌ doz. $4.05 net
Star Shank, All Steel..⅌ doz. $3.24 net
W. & C. Shank, All Steel, ⅌ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓@33⅓&10%
L. & I. J. White.....30%

Clippers, Horse and Sheep—
Chicago Flexible Shaft Company:
'98 Chicago Horse, each....$8.75
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
} 20%

Clips, Axle—
*Regular Styles, list July 1, '05.*60%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....75@75&4%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—
Metal Stamping Co.....40%

Mane and Tail—
Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.
Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
Wm. Schollhorn Co.:
Excelsior Dividers.....60%
Lodi Dividers.....75%

Conductor Pipe,—
L. C. L. to Dealers:

Territory:	*Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper.*
Eastern:			
	70&10 %	60&7½%	50%
Central:			
	70& 2½%	60 %	40&10&5%
Western and S. W.:			
	65&10 %	50&10&2½%	47½%
So. Western			
	62½&7½%	50&5%	40&10%
Copper.		1¼&16 oz.	
Eastern			.50&10%
Central			.50&7½%
Southern			.50&5%
So. Western			.50&2½%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal, each..	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	$2.70
Gal....	3	4	5	6	8
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal....	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled.....25%
Agate Lined.....25%

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—
Soldering Coppers, 3 lbs. to pair and heavier, 23@24¢; lighter than 3 lbs. to pair.....25@26¢

Cord— Sash—
Braided, Drab.....*lb.* 35¢
Braided, White, Com., Nos. 8 to 12, 24¢; No. 7, 24½¢; No. 6, 25½¢.
Cable Laid Italian.....*lb., A, 18¢; B, 16¢*
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted..17@19¢
Patent Russia.....*lb.*...@14¢
Cable Laid Russia....*lb.*...@15¢
India Hemp, Braided..*lb.*...@18¢
India Hemp, Twisted..*lb.* 12@13¢
Patent India, Twisted.*lb.* 12@13¢
Anniston Cordage Co.: ⅌ doz., 50 ft., Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ⅌ lb, 24½¢; No. 7, 23½¢; Nos. 8 to 12, 23¢
Eddystone Braided, Nos. 8, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....⅌ lb 23 ¢
Peerless:

Cabl Laid Italian	16 ¢
Cable Laid Russian	14 ¢
Cable Laid India	12 ¢
Braided India	18 ¢

Pullman:

Wire Sash Cord	18%
Sash Cord Attachments, per doz.	10¢

Samson, Nos. 8 to 12:

Braided, Drab Cotton	⅌ lb 40 ¢
Braided, Italian Hamp	⅌ lb 40 ¢
Braided, Linen	⅌ lb 55 ¢
Braided, White Cotton or Spot	⅌ lb 35 ¢
Massachusetts, White	⅌ lb 30 ¢
Massachusetts, Drab	⅌ lb 35 ¢
Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.	

Silver Lake:

A, Drab	45 ¢
A, White	40 ¢
B, Drab	40 ¢
B, White	35 ¢
Italian Hemp	40 ¢
Linen	57½ ¢

See also Chain and Ribbon.

Wire, Picture—
List Oct., '00.....
85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord, 85&10%

Cradles—
Grain.....40&12½%

Crayons—
White Round Crayons, gr..6@6½¢
Cases, 100 gro., $5.00 at factory.

D. M. Steward Mfg. Co.:
Genuine. Per gro.
Round Pencil, $2.25; Square Pencil, $1.75; Flat Crayon, $2.50; Metal Workers' Crayon, $3.00; Rolling Mill Crayon, $3.00.

Compo. Per gro.
Round Pencil, $1.50; Square Pencil, $1.50; Flat Crayon, $1.50; Metal Workers' Crayon, $2.50; Rolling Mill Crayon, $2.50; Railroad Crayon, $4.00; Compo. Crayon, $4.00.

} Case lots, 20%. Case lots, 60&20%

Zelnicker's Lumber:
Red, Blue, Green.....⅌ gro. $6.50
Black.....⅌ gro. $4.00
See also Chalk.

Crooks, Shepherds'—
Fort Madison, Heavy.....⅌ doz. $7.00
Fort Madison, Light.....⅌ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden.....50%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847..⅌ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....⅌ doz. $3.00
Wm. Rogers & Son.....⅌ doz. $2.50

Cutters— Glass—
H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—
American.....30%

Nos.	1	2	3	4	8
Each	$5	$7	$10	$25	$60

Enterprise.....25@25&7½%

Nos.	8	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's.....⅌ doz. 40@50%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....⅌ doz. 40@50%

Nos.	306	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....25%
New Triumph No. 605, ⅌ doz. $24.00.....40@50%
Russwin Food, No. 1, $21.00; No. 2, $27.00.....45&10&10%
Woodruff's.....⅌ doz. 40@50%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....⅌ doz. $3.00
Combined Slaw Cutter and Corn Grater.....⅌ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..⅌ gr. $18@$20
Slaw Cutters, 2 Knife..⅌ gr. $22@$3¢

Tobacco—
All Iron, Cheap..*doz.* $4.25@$4.50
Enterprise.....25@30%
National, ⅌ doz., No. 1, $21; No. 2, $18.....40%
Sargent's, ⅌ doz., No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

Washer—
Appleton's, ⅌ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz. $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers.....⅌ doz. $6.25
Iwan's Perfection Post Hole Digger..⅌ doz. $8.25
Iwan's Split Handle Post Hole Diggers.....⅌ doz.. $7.25
Kohler's Universal.....⅌ doz. $14.00
Kohler's Little Giant.....⅌ doz. $12.00
Kohler's Hercules.....⅌ doz. $10.00
Kohler's Invincible.....⅌ doz. $9.00
Kohler's Rival.....⅌ doz. $8.00
Kohler's Pioneer.....⅌ doz. $7.00
Never-Break Post Hole Diggers, ⅌ doz., $24.00.....60%
Samson, ⅌ doz. $34.00.....25%

Dividers—See *Compasses.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ⅌ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—
Diamond Emery Wheel Dressers.....35%
Diamond Wheel Dresser Cutters.....35%

Drills and Drill Stocks—
Common Blacksmiths' Drill, each.....*$1.50@$1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved.....40%
Ratchet, No. 012.....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—
Bit Stock.....60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—
Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ⅌ doz., 2½-in., $6; 4-in., $7.50; 6-in., ⅌.....50%
Buck Bros.' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet.....35%
Goodell's Auto..50&10&10@60&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 29 and 21 ..25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50, 53 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles.....65%
No. 86.....75%
Victor.....55%
Defiance.....70%
Swan's:
Nos. 7565 to 7568.....50%
No. 7540.....40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper.*
Eastern:			
	80&2½%	70&7½%	50%
Central:			
	75&10&7½%	70%	40&10&5%
Western and S. W.:			
	70&20&7½%	60&15&2½%	47½%
So. Western:			
	70&20%	65&2½%	40&10%

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—
Factory shipments, all territories:
Galv. Steel and Galv. C. I. Gauge.....60&10%
No. 26.....50%
No. 24.....25%
No. 22.....10%
Copper.....50%

Elbows, Stove Pipe—
Dover, one piece.....40%
Perfect Elbows (R. M. W. Co.).....40%

Emery, Turkish—
4 to 46 5¼ to 220 Flour.

Kegs	*lb.* 5 ¢	5½ ¢	5¾ ¢
½ Kegs	*lb.* 5¼ ¢	5¾ ¢	6¼ ¢

¼ Keys....lb. 5½¢ 6 ¢ 4 ¢
10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢
10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%

Cord and Weight—
Ives 40%

Faucets—
Cork Lined.....50@50&10%
Metallic Key, Leather Lined..60&10@70%
Red Cedar.....40&10@50%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List revised Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103.....$3.75
Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.25*	*3.75*	*4.25*	*4.75*

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's 70%
Stowell's Giant Grindstone Hanger.. ℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy .....50&10&10%
Stowell's Grindstone Fixtures, Light. 60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Eay Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00&1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.50*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp .....$2.75 } 3¢
Cotton .....3.20 }
Waterproof Spl. Taped..3.65 } 10&3½%
Waterproof Dbl. Taped..4.40 }
Waterproof Tpl. Taped..5.15 }

Gates, Molasses and Oil—
Stebbins' Pattern.....80&10%

Gauges—
Marking, Mortise, &c..50&10@60%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—
Common Grade....gro. $4.50@6.00
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—
Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00 } 33⅓%
Pike Mower and Tool Grinder, each .....$6.00 }
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.00

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&10@60&10&5%
Covert Mfg. Co.:
Web 45%
Jute Rope.....45%
Sisal Rope.....33⅓%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters.....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties.....60&10%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties 60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—
Handled Hammers—
Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
Plumb, A. E. Nail.....33¼&7½@33¼&10&7½%
Engineers' and B. S. Hand.....50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢.....80&10%
Over 5 lb., per lb., 30¢..80&10&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....45@50%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50%
D Handles.....50@50&5%

Cross-Cut Saw Handles—
Atkins' 40%
Champion .....45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $2.50@$3.00
Brad Awl.....gro. $1.65@$1.75
Chisel Handles:
Apple Tanged Firmer, gro. assorted .....$2.40@$2.65
Hickory Tanged Firmer, gro. assorted .....$2.15@$2.40
Apple Socket Firmer, gro. assorted .....$1.75@$1.95
Hickory Socket Firmer, gro. assorted .....$1.45@$1.60
Hickory Socket Framing, gro. assorted .....$1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel .....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle... ℔ gro. $1.85@$1.50

Hangers—
NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c
Allith Mfg. Co.:
Reliable, No. 1.....per doz. $8.00
Reliable, No. 2.....per doz. $9.00
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10. $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.....60&5%
Hinged.....net $6.40
Covered .....60&2%
Special .....70&5%
Lawrence Bros.:
Advance .....60&10%
Cleveland 75%
Clipper, No. 75.....60%
Crown .....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25. Giant .....60&5%
Hummer .....70&5%
New York.....60&10%
Peerless 75%
Sterling .....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.00
Ball B'r'g St'l Track No. 10.50&10%
Roller B'r'g St'l Track No. 12.$2.15
Roller B'r'g St'l Track No. 13.$2.30
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&10%
Trolley B. D. No. 17.....$1.25
Trolley F. D. No. 120.....$2.10
Trolley F. D. No. 121.....$2.25
Trolley F. D. No. 150.....$2.35
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&10%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.00
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24.....$1.30
Trolley B. D. No. 27.....$1.40
Trolley B. D. No. 28.....$1.60
Roller Bearings Nos. 39, 41, 43 .....75%
Anti-friction No. 42.....60&20%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas 60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator 40%
Express 50%
Freight Car Door.....60%
Interstate .....60&10%
Lundy Parlor Door.....50&10%
Magic 60%
Matchless .....60&10%
Nansen .....70&5%
Parlor Door.....50&10%
Railroad .....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle 70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot 60%
Pilot Hinge.....60%
Rider Wooster 65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing..℔ doz. $5.00
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing....60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet 50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 123...40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Troller B-ll Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....60%
For Track, see Rail.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminor, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled.. $27.00
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

Gate—
Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—
Regular list, first quality....50%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....6½%
Sargent's, Nos. 1, 3, 11 and 13..75&10%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 95 .....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5.... 75&10&5%
Tip Pat'n, Nos. 1, 3 & 5.....10&5%
Buffalo Gravity Lockir , Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'chs.	*$2.00*	*2.70*	*5.00*
Hinges only	*1.40*	*2.05*	*3.80*
Latches only	*.70*	*.70*	*.35*

New England:
With Latch.....doz. ....@$2.00
Without Latch...doz. ....@$1.60
Reversible Self-Closing:
With Latch.....doz. ....@$1.75
Without Latch...doz. ....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets.

	Nos. 1	*1*	*2*	*3*
Hinges with Latches	$2.00	2.70	5.00	
Hinges only	1.40	2.05	3.80	
Latches only	.70	.70	1.35	

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—
Holdback, Cast Iron...$6.50@$7.00
Non-Holdback, Cast Iron$6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges 40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge 50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Lawson Mfg. Co. Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Ball Bearing Floor Hinge....50%
Ohio Detachable Screen Door Hinge .....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea, Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k, ℔ gro. pr. $9

Extra 5&10% often given.

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges.....65%
Heavy T Hinges.....60%
Extra H'y T H'g's.70&10%
Hinge Hasps.....50%
Cor. Heavy Strap...75&5%
Cor. Ex. Heavy T.70&10%
Extra 10@10&5 %
Screw Hook and Strap. 6 to 12 in..lb. 3¾¢; 1¼ to 20 in..lb. 3½¢; 22 to 36 in..lb. 3¼¢
Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch.....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
	Per doz.			
Inch	15	16	17	18
Galv. Open	$2.50	2.75	3.00	3.25
Jap. Open	$1.90	2.10	2.25	2.55
Galv. Funnel	$3.00	3.30	3.60	3.90
Jap. Funnel	$2.45	2.65	2.85	3.30

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

Hoes— Eye—
Scovil and Oval Pattern.....60&10@60&10&10%
Grub, list Feb. 23, 1899.....70&10@75&10%
D. & H. Scovil.....33⅓%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Cronk's Weeding No. 1, $2.00; No. 2, $2.25
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2½%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe,℔doz.$4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ℔ doz. $24.00.....45&10%

Door—
Bardsley's.....45%
Empire.....50%
Pullman.....60%

File and Tool—
Nicholson File Holders and File Handles.....33⅓&40%

Fruit Jar—
Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....60%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List, Nos. 29, 32, 33, 129, 132, 133 and 135.....50&10&10%
Clothes Line, Reading List.....40%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List..50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....80&10@..%
Wire C. & H. Hooks:.....75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....75%
Czar.....65%
V Brace.....75%
Czar Harness.....50&10%

Wrought Iron—
Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $1.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz.....$1.30
Whiffletree.....lb. 8¾@6¢
Hooks and Eyes:
Brass.....60&5@60&10&5%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....ft. 5 @ 6 ¢
3-ply Guaranteed..ft. 8 @ 9 ¢
4-ply Guaranteed..ft. 10 @11 ¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8 @ 9 ¢
Fair Quality.....ft. 10 @11 ¢

Irons— Sad—
From ½ t o 10.....lb. 3 @3½¢
B. B. Sad Irons.....lb. 3¼@3½¢
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	68	65	78	75
Tin'd Tops	71	68	81	78

New England Pressing.lb. 3¾@4¢

Pinking—
Pinking Irons.....doz. 60¢

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....50%

Corn—
Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....75@75&10%
C. E. Jennings & Co., Nos. 45, 46...60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—
Serrated Edge, per doz. $5.75@6.00
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—
Buffalo.....℔ gro. $13.00

Miscellaneous—
Farriers'.....doz. $3.00@3.25
Wostenholm's.....℔ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....gro. $1.25@$1.50
Carriage, Jap., all sizes.....gro. 40@45¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—
See *Belting, Leather—*

Ladders, Store, &c.—
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—
Regular Tubular, No. 0.....doz. $4.25@4.50
Lift Tubular, No. 0.....doz. $4.75@5.00
Hinge Tubular, No. 0.....doz. $4.75@5.00
Other Styles.....40@40&5%

Bull's Eye Police—
No. 1, 2¾-inch.....$2.75@3.00
No. 2, 3-inch.....$3.00@3.25

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—
Roggin's Latches, with screw..doz. 35@40¢

Door—
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—
Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, Hemp and Jute, 45%; Sisal, 33⅓%.

Lifters, Transom—
B. & E.....33⅓%

Lines—
Wire Clothes, Nos.	18	19	20
100 feet	$2.25	2.00	1.75
75 feet	$1.75	1.35	1.10

Anniston Waterproof Clothes, 50 ft., ℔ gro. $25.00; Gilt Edge, $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%

Locks— Cabinet—
Cabinet Locks...33⅓@33⅓&7½%

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—
Stowell's.....30%

Padlocks—
Wrought Iron....75&10&5@80&5%
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—
Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Swan's Improved.....40&10%
Angular.
Jennings' Nos. 1 and 4.....35&5%
Millers' Falls.....5.75
Snell's, Rice's Pat. 2.50 2.75

Corking—
Reisinger Invincible Hand Power.....℔ doz. $48.00

Fence—
Williams' Fence Machines....each, $5.50

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—
Chandler's.....12½%

Washing—
Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$54.00
Champion Rotary Banner No. 1	$54.00
Standard Champion No. 1	$48.00
Standard Perfection	$26.00
Cintí Square Western	$30.00
Unzeda American, Round	$30.00

Mallets—
Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners' Hickory and Apple-wood.....doz. 45&5@50%

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%

Mats, Door—
Elastic Steel (W. G. Co.), new list..50&10%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....all sizes, $1.85@2.00
Cheap.....all sizes, $2.00@2.50
Better Grade..all sizes, $2.50@4.50

	12	14	16	18-in.
High Grade	$4.50	4.75	5.00	5.25

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M, S, C, K, T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

Nails—
Wire Nails and Brads, Papered, List July 20, 1899..85&5@85&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—
Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	15	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5%
Putnam	23	21	20	19	18	...33⅓%
New Putnam	19	18	17	16	16	..10&10%
Western						℔ 5½¢

Jobbers' Special Brands.....per lb. 9@10¢

Picture—
	1½	2	2½	3	3½ in.	
Brass H'd.	.45	.55	.60	.70	..	gro
Por. Head.	1.10	1.10	1.10	..	..	gro

Nippers—
See *Pliers and Nippers.*

Nuts—
Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, Blank or Tapped..$4.90
Hexagon, Blank or Tapped.$5.30
Square, Blank, C. & T....$5.20
Hexagon, Blank, C. & T...$5.90
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank.....$5.30
Hexagon, Blank.....$5.20
Square, Tapped.....$5.20
Hexagon, Tapped.....$5.70

Oakum—
Best.....lb. 6¼@6½¢
U. S. Navy.....lb. 5¾@6¢
Navy.....lb. 4½@5¢
Plumbers' Spun Oakum...2½@3¢
In carload lots ⅛¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....50&10%
Tin or Steel.....65&10@70%
Zinc.....65&10@70%
Chase or Paragon:
Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc.....65&10%
Malleable, Hammers' Imp'ed, Nos. 11, 12 and 13.....20%
Malleable, Hammers' Old Pattern, Nos. 1, 2 and 3.....50%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*
Sprague, Iron Handle....30@35¢
Sprague, Wood Handle...35@40¢
Sardine Scissors.....$1.75@$3.00
National.....50&10%
Stowell's Sprague.....℔ doz. 35@45¢
Vim Tin Shear and Can Opener, ℔ doz., 75c.; per gro., $7.50

Egg—
Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

Packing—
Asbestos Packing, Wick and Rope.....lb. 15&20¢

Rubber—
(Fair quality goods.)
Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ℔ lb 80¢.....25@25&5%

Miscellaneous—
American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@12½¢
Jute.....lb. 4@ 4½¢
Russia Packing.....lb. 8@11 ¢

Pails, Creamery—
R. M. W. Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—
See *Buckets.*

Pans— Dripping—
Standard List.....65&10%

Fry—
Common Lipped:

	Nos.	1	2	3	4	5
Per doz.		$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—

	Inch	12	14	16	18
Per doz.		$1.95	2.25	2.80	3.15

Roasting and Baking—
Regal, R. W. M. Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper
Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.6¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.....8¢
Mill Board, Sheet, 40 x 40 in., 1-32 to ⅛ in.....10¢
As per list.
Rosin Sized Sheathing: 500 sq. ft. Per roll
Light weight, 25 lbs. to roll.....35@37½¢
Medium weight, 30 lbs. to roll, 40@43¢
Heavy weight, 40 lbs. to roll..56@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 2, 6 and 4½ sq. ft. to lb. ton.....$50.00
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—
1 ply (roll 500 sq. ft.), ton....$32.50@35.50
2 ply, roll 108 sq. ft.....55¢
3 ply, roll 108 sq. ft.....75¢
Slater's Felt (roll 500 sq. ft.).75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—
Flint Paper and Cloth.60@60&10%
Garnet Paper and Cloth....25%
Emery Paper and Cl'h.60@60&10%

Parers— Apple—
Advance.....℔ doz. $4.00
Baldwin.....℔ doz. $4.00
Bonanza Improved.....each $6.50
Daisy.....℔ doz. $4.00
Dandy.....each $7.50

Eureka Improved.....each $20.00
Family Bay State.....⅌ doz. $15.00
Improved Bay State.....⅌ doz. $6.00
Little Star.....⅌ doz. $5.00
New Lightning.....⅌ doz. $7.00
Reading 72.....⅌ doz. $3.25
Reading 78.....⅌ doz. $6.25
Rocking Table.....⅌ doz. $6.20
Turn Table '98.....⅌ doz. $6.00
White Mountain.....⅌ doz. $5.00

Potato—
Saratoga.....⅌ doz. $7.00
White Mountain.....⅌ doz. $6.00

Picks and Mattocks—
List Feb. 23, 1899.....75%
Cronk's Handled Garden Mattock, ⅌ doz., $6.40.....33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass.....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Carload lots.
Standard, 2-6 in.....60%
Extra Heavy, 2-6 in.....70%
Fittings.....75%

Pipe, Merchant—
Consumers, Carloads.

	Steel.		*Iron.*	
	Blk.	*Galv.*	*Blk.*	*Galv.*
⅛ & ¼ in..	*71%*	*55%*	*68½%*	*52½%*
⅜ in.....	*73%*	*59%*	*72½%*	*60½%*
½ in.....	*75%*	*63%*	*72½%*	*60½%*
¾ to 6 in..	*79%*	*69%*	*77*	*67*
7 to 12 in..	*74%*	*59%*	*72*	*56½%*

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 2 to 24 in.:
New England.....68%
New York and New Jersey..71%
*Maryland, Delaware, E. Pa.*75%
west. Pa. and West Va....77%
Virginia.....76%
Ohio, Michigan and Ky....77%
Indiana.....77%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—
Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—
Wood Planes—
Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding.....33⅓&10%
Bailey's (Stanley R. & L. Co.).....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union.....60%

Iron Planes—
Bailey's (Stanley R. & L. Co.).....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....60&10%
Union.....60%

Plane Irons—
Wood Bench Plane Irons.....
25&10@50%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union.....50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....⅌ doz. $8.50

Plates—
Felloe.....lb. 4@4¼¢
Self-Sealing Pie Plates (R. M. W. Co.). ⅌ doz. $2.00.....50%

Pliers and Nippers—
Button Pliers....75&10@75, 10, 5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
'American Button.....75&10%
Cronk's.....60%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....50%
P., S. & W. Tinners' Cutting Nippers.....40%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Elm City.....33⅓%
Lodi.....50%
Paragon.....50%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....10%
Disston's Pocket Levels.....10%
C. E. Jennings & Co.'s Iron.....35%
C. E. Jennings & Co.'s Iron, Adjustable.....40&7½%
Stanley R. & L. Co.....45%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, ⅌ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—
Bulk and 1-lb. papers,lb..8½@9 ¢
½-lb. papers.....lb.9 @9½¢
¼-lb. papers.....lb.9¾@10¼¢

Pokes, Animal—
Ft. Madison Hawkeye.....⅌ doz. $3.25
Ft. Madison Western.....⅌ doz. $4.00

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's.....25%

Polish—Metal, Etc—
Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ⅌ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ⅌ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), ⅌ doz., $3.00; No. 2 (1 qu.), $9.72.....40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ⅌ doz. 50¢; ⅌ gro. $4.50; ⅛ lb boxes, ⅌ doz. $1.25; 1 lb boxes, ⅌ doz. $2.25.
U. S. Liquid, 8 oz. cans, ⅌ doz., $1.25; ⅌ gro., $12.00.
Barkeepers' Friend Metal Polish, ⅌ doz., $1.75; ⅌ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ⅌ doz.....$2.00

Stove—
Black Eagle Benzine Paste, 5 lb cans, ⅌ lb 10¢
Black Eagle, Liquid, ½ pt. cans... ⅌ doz. 75¢
Black Jack Paste, ¾ lb cans, ⅌ gr. $9.00
Black Kid Paste, 5 lb can....each. $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ⅌ gr. $5.75.....10%
Dixon's Plumbago.....⅌ lb 8¢
Fireside.....⅌ gr. $2.50
Gem, ⅌ gr. $4.50.....10%
Japanese.....⅌ gr. $3.50
Jet Black.....⅌ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ⅌ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....⅌ doz. $1.00
Black Silk, 5 oz. box.....⅌ doz. $0.75
Black Silk, ½ pt. liq.....⅌ doz. $1.00

Poppers, Corn—
1 qt., Square.....*gro. $9.00*
1 qt., Round.....*gro. $10.00*
1½ qt., Square.....*gro. $11.00*
2 qt., Square.....*gro. $13.00*

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled.....40%
Tinned.....35%

Powder—
In Canisters:
Duck, 1 lb.....*each 45¢*
Fine Sporting, 1 lb....*each 75¢*
Rifle, ½-lb.....*each 15¢*
Rifle, 1-lb.....*each 25¢*
In Kegs:
12½-lb. kegs.....*$3.50*
25-lb. keys.....*$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50
King's Smokeless: Shot Gun. Rifle.

Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, ⅌ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Cork—
Invincible Cork Puller.....$21.00

Pullers, Nail—
Cyclops.....50%
Miller's Falls, No. 3, ⅌ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ⅌ doz. $20.00.....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ⅌ doz. $6.00
Diamond B, No. 3, case lots..... ⅌ doz. $5.50
Giant No. 1, ⅌ doz. $18; No. 2, $16.50; No. 3, $15.....33⅓%
Staple Pullers.....60%
Parrot Tack and Stub Puller, ⅌ doz., 75c.; ⅌ gro., $6.00

Pulleys, Single Wheel—

Inch.....	*1½*	*1¾*	*2*	*3*
Awning or Tackle, doz......	*$0.30*	*.45*	*.60*	*1.05*
Hay Fork, Swivel or Solid Eye, doz., ½ in., $1.25; 5 in...				*$1.55*
Inch.....	*2*	*2¼*	*2½*	
Hot House, doz...$0.65		*.85*	*1.20*	
Inch.....	*1¼*	*1½*	*1¾*	*2*
Screw, doz....$0.16		*.19*	*.23*	*.30*
Inch.....	*1¾*	*2*	*2¼*	*2½*
Side, doz.....$0.25		*.40*	*.55*	*.60*
Inch.....	*1½*	*1¾*	*2*	*2½*

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in.....*16@19¢*
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ⅌ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal.....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—
Cistern.....*60@60&10%*
Pitcher Spout.....*80@80&10%*
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....⅌ doz. $6.75
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's, Fast Mail (low list).....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$6.00
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%

Pump Leathers—
Plunger and Lower Valve—Per gro.:

Inch...	*2*	*2¼*	*2½*	*2¾*
	$2.20	*2.50*	*2.75*	*3.00*
Inch...	*3*	*3¼*	*3½*	*4*
	$3.30	*3.60*	*3.85*	*4.10*
				4.40

Plunger Cup Leathers—Per 100:

Inch...	*2½*	*3*	*3½*	*4*
	$2.75	*3.85*	*5.00*	*6.00*

Punches—
Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality.....*$1.75@2.00*
Revolving (4 tubes)..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Lodi.....50%
Paragon.....50%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co...40%
Tinners' Solid, P., S. & W. Co., ⅌ doz., $1.44.....60%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron.... *2½@2¾¢*
Sliding Door, Wrought Brass, 1½ in., lb., 36¢.....*50%*
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ⅌ ft. 5½¢
No. 2, Reliable Hgr. Track, ⅌ ft. 7¢
Cronk's:
Double Braced Steel Rail..⅌ ft. 2¾ c
O. N. T. Rail.....2½¢
Griffin's:
xxx, ⅌ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ⅌ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ⅌ 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T., ⅌ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....⅌ 100 ft. $4.00
Lawrence Bros.:
⅌ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ⅌ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ⅌ ft., 11¢..50%
None Better.....⅌ ft. 3¾¢
Standard.....⅌ ft. 4 ¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common 1 x 3-6 in., $2.25; 1¼ x 3-16, $2.50; 1¼ x 3-16, $2.75.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ⅌ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard.....60%
Stowell's:
Cast Rail.....⅌ ft. 1¾ ¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....⅌ ft. 3¢
Wrought Bracket, 1½ x 5-16..⅌ ft. 7¢
Swett's Hylo, ⅌ ft. 11¢.....60%
P. L. B. Steel Rail.....⅌ 100 ft. $3.00
No. 0, 1 x 3-16.....⅌ 100 ft. $2.75

Rakes—
NOTE. — Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ⅌ doz., net.....$4.25
Cronk's:
New Champion Garden, ⅌ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ⅌ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00.....80%
Queen City Lawn, ⅌ doz., 20 teeth, $3.45; 24, $3.60.....net.
Anticlog Lawn, ⅌ doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....⅌ doz. $3.45
Lawn Queen, 24-tooth.....⅌ doz. $3.60
Paragon, 20-tooth.....⅌ doz. $2.75
Paragon, 24-tooth.....⅌ doz. $3.00
Steel Garden, 14-tooth...⅌ doz. $2.40
Malleable Garden, 14-tooth, ⅌ doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—
Disston's.....75%
Heller Bros.'.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Boras—I C.....60%
Fox Razors, No. 42...⅌ doz. $20.00
Fox Razors, No. 44...⅌ doz. $20.00
Fox Razors, No. 82, Platina... ⅌ doz. $25.00
} Dis 40%
Red Devil.....50%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—
Kampfe Bros.:
Star Safety.....25%
Star Interchangeable.....25%
Star Safety Corn.....25%
Silberstein.....40%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
00204 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed.....70&10%

Revolvers—
Single Action.....*95¢@$1.00*
Double Action, except 44 cal.$1.85
Double Action, 44 caliber....*$2.00*
Automatic.....*$3.45*
Hammerless.....*$4.00*

Riddles, Hardware Grade
16 in.....*per doz. $2.25@$2.50*
17 in.....*per doz. $2.50@$2.75*
18 in.....*per doz. $2.75@$3.00*

Rings and Ringers—
Bull Rings—

	2	*2½*	*3 inch.*
Steel.....	*$0.70*	*0.75*	*0.80 doz.*
Copper.....	*$1.00*	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ⅌ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—
Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... *doz. 50@55¢*
Hill's Ringers, Malleable Iron.. *doz. 70@75¢*
Blair's Rings...per gro.$4.75@5.25
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—
Copper.....45%
Iron or Steel.....75@75&65%

Bifurcated and Tubular—
Assorted in Boxes..
Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay No. 65, $0.90; No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..⅌ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....⅌ doz. 65¢
Hinge Adjustable Stay.....⅌ doz. 90¢

Rope—
Manila, 7-16 in. diam. and larger: Pure.....*lb., 12½¢*
Sisal, 7-16 in. diam. and larger: Pure.....*lb., 10¢*
Sisal, 7-16 in. diam. and larger: No. 2 quality.....*lb., 8¢*
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed.....*lb., 8¢*
Pure.....*lb. 10¢*
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed.....*lb., 8¢*
Pure.....*lb. 10¢*
Cotton Rope: Best, ¼-in. and larger. 16½@18¢
Medium, ¼-in. and larger, 15½@16½¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread No. 1, ¼-in. & up. lb. 6¼¢
Thread No. 2, ¼-in. & up. lb.5¾¢
Old Colony Manila Transmission Rope.....⅌ lb 17½ ¢

Wire Rope—
Galvanized.....*37½&2½%*
Plain.....*45&2½%*

Ropes, Hammock—
Covert Mfg. Co.:
Jute.....45%
Sisal.....33⅓%
Covert Saddlery Works.....60&5%

Rulers, Desk—
Stimpson & Son:
Boxwood and Maple.....30&10%

Rules
Boxwood .....40&10&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60@60&10%
Flexifold .....27½&10&10&2½%
Ivory .....35@35&10&10%
Miscellaneous .....50@50&10&10%
Combination .....55@55&10%
Stationers' .....10@10&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag.....40%
Zig Zag, Pin Joint.....42½%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular 50%
Band .....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth..50%
Band, 2 to 14 in. wide.....60%
Band, ¼ to 1⅜.....60%
Crosscuts 50%
Narrow Crosscuts.....55%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, 108, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....25%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws.....30%
Hand Saws.....20&2½%
Wood Saw Blades.....35%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....40%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—
Atkins' Hack Saw Blades A A A..35%
Disston's:
Concave Blades.....25%
Keystone 40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best...35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames...30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades.....25%
Victor Hack Saw Frames.....40%

Scroll—
Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—
Covert's Saddlery Works.....60&10%

Scales—
Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. .....doz. $5.50
Two Platforms, ½ oz. to 8 lbs. .....doz. $16.00
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2.....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list)..25@35%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.50%

Scrapers—
Box, 1 Handle.....doz. $2.00@2.25
Box, 2 Handle.....doz. $2.60@2.85
Ship....Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....45%
Chapin-Stephens Co., Box, 30@30&10&10%

Screens, Window and Frames—
Maine Screen Frames.....40&10&5%
See also *Doors.*

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, W'd, Beech..doz. 30@30&5%
Hand, Wood.....30@30&5%
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—
Lag, Cone Point, list Oct. 1, '99 .....75&15%
Coach, Gimlet Point, list Oct. 1, '99.....75&10%
Hand Rail, list Jan. 1, '81....70&10@75%

Jack Screws—
Standard List.....80@80&5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50%
Sargent .....70&10%
Swett Iron Works.....75&10@80&5%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron.... 50@50&10%
Flat or Round Head, Brass.... 50@50&10%

Set and Cap—
Set (Iron).....80%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap.....75%
Hex. Hd. Cap.....75%
Rd. Hd. Cap.....60&10%
Fillister Hd. Cap.....60&10&10%

Wood—
List July 23, 1903.
Flat Head, Iron.....87½&10@..%
Round Head, Iron...85 &10@..%
Flat Head, Brass....85 &10@..%
Round Head, Brass..80 &10@..%
Flat Head, Bronze...77½&10@..%
Round Head, Bronze.75 &10@..%
Drive Screws.....87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes— *per doz.*
Grass, No. 1, Plain Finish...$6.25
Clipper, Bronzed Webb....$6.50
No. 3 Clipper, Pol'd Webb..$6.75
No. 6 Clipper & Solid Steel..$7.00
Bush, Weed & Bramble, No. 2.$6.50
Grain, No. 1.....$8.25
Bronzed Webb, No. 1.....$8.50
Nos. 3 & 4 Clipper, Grain..$8.75
Solid Steel No. 6.....$9.25

Seeders, Raisin—
Enterprise .....25@30%

Sets— Awl and Tool—
Aiken's Sets, Awl and Tools:
No. 20, ℔ doz., $10.00.....60&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel.....℔ doz sets $9.00

Sets, Nail—
Octagon .....gro. $3.50@3.75
Buck Bros.....27½%
Cannon's Diamond Point, ℔ gro.$12.40%
Mayhew's .....℔ gro. $9.00
Snell's Corgated, Cup Pt...℔ gro. $7.20
Snell's Knurled, Cup Pt....℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt.℔ gro. $7.50

Rivet—
Regular list.....75@75&10%

Saw—
Aiken's:
Genuine .....50&10%
Imitation .....50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut.....30%
Plate 20%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.00...50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.00.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal Cross Cut....℔ doz. $8.00
Royal, Hand.....℔ doz. $4.50
Taintor Positive.....℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 30.....℔ doz., net, $24.00
Smith & Hemenway Co.'s.....60%

Sharpeners, Knife—
Chicago Wheel & Mfg. Co.....70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz.....$1.50
Mounted Kitchen Sand Stone, ℔ doz.....$1.50
Natural Grit Carving Knife Hones, ℔ doz.....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz.....$1.50
Quick Edge Pocket Knife Hones, ℔ doz.....$2.50

Skate—
Smith & Hemenway Co.....20%

Shaves, Spoke—
Iron .....doz.$1.10@1.25
Wood .....doz.$1.75@2.25
Bailey's (Stanley R. & L. Co.).....45%
Razor Edge (Stanley R. & L. Co.)..35%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ℔ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—
Cast Iron..	*7*	*8*	*9 in.*	
Best	*$16.00*	*18.00*	*20.00*	*gro.*
Good	*$13.00*	*15.00*	*17.00*	*gro.*
Cheap	*$5.00*	*6.00*	*7.00*	*gro.*

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fair quality, Nickel..75@7"&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
Wilkinson's Sheep, 1900 list.....50&10%

Tinners' Snips—
Steel Blades.....20&5@20&10%
Steel Laid Blades.....40&10@50%
Forged Handles, Steel Blades, Berlin, 50@50&5%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in.....50%
Niagara Snips.....40%
P., S. & W. Forged Handles.....20%

Pruning Shears—
Cronk's Hand Shears.....33⅓%
Cronk's Wood Handle Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00.....25%
Disston's Pruning Hook, ℔ doz. $12.00 .....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50&10%
P., S. & W. Co.....33⅓%
Wilkinson's Hedge, 1900 list.....50&10%
Wilkinson's Lawn and Border.....50%

Sheaves—Sliding Door—
Stowell's Anti-Friction.....50%
Patent Roller, Hatfield's, Sargent's list .....70&10%
Reading 40%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—
Reading list.....40%
R. & E. list.....33⅓%
Sargent's list.....10&10%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge .....65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20%
Climax, Union, League, New Rival, 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge.....20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓
Robin Hood, Low Brass.....20&5%
Robin Hood, High Brass.....30&5%

Shells, Loaded—
Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron .....per keg $4.00
Steel .....per keg $3.75
Burden's, all sizes.....℔ keg $3.90

Shot—
Drop, up to B, 25-lb. bag....$1.80
Drop, B and larger..... per 25-lb. bag, $2.05
Buck, 25-lb. bag.....$2.05
Chilled, 25-lb. bag.....$2.05

Shovels and Spades—
Association List, Nov. 15, 1902..40%

Snow Shovels—
Long Handle.....$2.75@$3.00
Wood and Mall. D. Handle, $3.25@$3.50

Sieves and Sifters—
Hunter's Imitation..... gro.$9.50@10.00
Hunter's Genuine..... per gro. $12.00@12.50
Buffalo Metallic Blued, R. M. W. Co., ℔ gr.

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00.....20%

Sieves, Seamless Metallic
Mesh	*14*	*16*	*18*	*20*
	Per dozen.			
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—
Painted, Standard list:
12 x 12 to 22 x 36 in....60&5%
20 x 40 to 24 x 50 in.....55%
24 x 60 to 24 x 120 in.....35%
Barnes' low list:
Up to and including 20 x 36 in....60%
20 x 40 to 24 x 50 in.....55%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron.....80@80&10%
Steel .....40@40&10%

Slates, School—
Factory Shipments.
"D" Slates.....50@50&10%
Eureka, Unexcelled Noiseless.. 60&5 tens
Victor A, Noiseless..60&5 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German .....40@40&10%
Covert Mfg. Co.:
Derby .....30&2%
High Grade.....45%
Jockey 35%
Trojan 45%
Yankee .....30&2%
Yankee Roller.....30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Harness Snaps, 1 inch.....60&5%
Swivel Snaps.....60%
Swivels 50%
Sargent's Patent Guarded....66⅔&10%

Snaths—
Scythe 50%

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality.....50&10@60&5%
Cheap .....60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton .....40&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Miscellaneous—
German Silver.....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—
Teas .....per gro. 45@50¢
Tables.....per gro. $0.50@$1.00

Springs— Door—
Chicago (Coil).....40&10%
Gem (Coil).....20%
Pullman (Coil).....25%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....℔ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.—
1¼ in. and Wider:	*Per lb.*
Black	*4@4¼¢*
Half Bright	*4@4¼¢*
Bright	*4½@4¾¢*

Painted Seat Springs:
1½ x 2 x 26.....per pr. 42¢
1½ x 3 x 28.....per pr. 70¢

Sprinklers, Lawn—
Enterprise .....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24.....30%
Pleuger & Henger Mfg. Co.:
Cactus 70%
Japanese 75%
Nationals 60%

Squares—
Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron. } *75&5@75&10%*
Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2.....50%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—
Barbed Blind.....lb. 6@6½¢
Electricians', Association list.. 80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized $2.55
Poultry Netting Staples..... per lb. 3¼@3½¢
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—
Dick's 30%
Foster Bros.'.....30%
C. & A. Hoffmann's.....40%

Steelyards— .....30@30&10%

Stocks and Dies—
Blacksmiths' .....50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates.....25%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stoners, Cherry—
Enterprise .....25@30%

Stones—Oil, &c.
Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit.60%
Gem Corundum Axe, Single or Double Grit.....60%
Gem Corundum Slips.....60%
Gem Corundum Razor Hones....50%
Pike Mfg. Co., 1904 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in.$2.60
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in.30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%

Hindostan No. 1, R'g'lar. ℔ lb 8¢
Hindostan No. 1, Small.. ℔ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in. ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢
} 25%

Scythe Stones—

Chicago Wheel & Mfg. Co.: Gem Corundum, 10 in., $8.00 ℔ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ℔ gro. $9.00
One gross or more ℔ gro. $7.20
Lots of 10 gross or more ℔ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.00
Green Mountain S. S. ℔ gro. $6.00
Extra Indian Pond S. S. ℔ gro. $7.50
No. 1 Indian Pond S. S. ℔ gro. $7.00
No. 2 Indian Pond S. S. ℔ gro. $4.50
Leader Red End S. S. ℔ gro. $4.50
Quick Cut Emery ℔ gro. $10.00
Pure Corundum, ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%
} 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers ℔ gro. $9.00

Stops— Bench—

Millers Falls 15&10%
Morrill's, ℔ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots 25&20%

Hame—

Covert's Saddlery Works 60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket doz. $1.60
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00 20%

Strops, Razor—

Star Diagonal Strop 25%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

Sweepers, Carpet—

National Sweeper Co.: ℔ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled $36.00
National Queen, Roller Bearing, Fancy Veneers $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $21.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned $33.00
Auditorium (26 in. case), Roller Bearing, Nickeled $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled $60.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:
Model E, Sanitaire ℔ doz $25.00
Model A, Sterling ℔ doz. $25.00
Model B, Sterling, Nickeled ℔ doz. $25.00
Model B, Sterling, Japanned ℔ doz. $21.00
Model C, Sterling ℔ doz. $21.50
Model D, Sterling ℔ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks 90&37½%
American Cut Tacks 90&37½%
Swedes Cut Tacks 90&37½%
Swedes Upholsterers' Tacks 90&50%
Gimp Tacks 90&50%
Lace Tacks 90&50%
Trimmers' Tacks 90&37½%
Looking Glass Tacks 65%
Bill Posters' and Railroad Tacks, 90&50%
Hungarian Nails 85%
Finishing Nails 70%
Trunk and Clout Nails 80&5%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks 90&6 *or 7 tens*
Steel Wire Brads, R. & E. Mfg. Co.'s list 50&10@60%
See also Nails, Wire.

Tanks, Oil— Each.

Emerald, R. M. W. Co. 30-gal. $3.40
Emerald, R. M. W. Co. 60-gal. $4.25
Queen City, R. M. W. Co. 30-gal. $3.65
Queen City, R. M. W. Co. 60-gal. $4.50

Tapes, Measuring—

American Axes' Skin 50@—%
Patent Leather 25@30&5%
Steel $3 *1-3&5%*
Chesterman's 25@25&5%
Eddy Axes' Skin 40&10@50%
Eddy Patent Leather 25@30&5%
Eddy Steel 40@40&10%
Keuffel & Esser Co.
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list 35@35&5%
Pocket 35@35&5%
Lufkin's:
Axes' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case 80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop 80&2½%
Monitor, Cross Head, &c 70%

Brick Ties—

Niagara Brick Ties 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Miniature—

Smith & Hemenway Co.'s 25%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida 75@75&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 70&10%
Oneida Community Jump 50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ℔ doz. $13.25
No. 3, Rat, ℔ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ℔ doz. $5.25; case of 72 ℔ gro. $4.70 doz.
No. 4, Mouse, ℔ doz. $3.65; case of 150 $3.00 doz.
No. 5, Mouse, ℔ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E 1 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ℔ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ℔ gro. $6.00
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ℔ doz. $16.00
Grocery ℔ doz. $15.00
Daisy Stove Trucks, Improved Pattern ℔ doz. $18.50
McKinney Trucks each $10.00
Model Stove Trucks ℔ doz. $18.50

Tubs, Wash— *No.* 1 2 3

Galvanized, per doz. $4.25 4.75 5.25
Galvanized Wash Tubs (R. M. W. Co.):

No.	1	2	3	10	20	30
Per doz., net.	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

Flax Twine: BC. B.
No. 9, ¼ and ⅓-lb. Balls 22@24¢
No. 12, ¼ and ⅓-lb. Balls 18@20¢
No. 18, ¼ and ⅓-lb. Balls 16@18¢
No. 24, ¼ and ⅓-lb. Balls 16@18¢
No. 36, ¼ and ⅓-lb. Balls 15@17¢
Chalk Line, Cotton ½-lb. Balls 25@30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz. 10@18¢
Cotton Wrapping, 5 Balls to lb., acording to quality 14½@20¢
American 2-Ply Hemp, ¼ and ½-lb. Balls 13@14¢
American 3-Ply Hemp, 1-lb. Balls 13@14¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 9½¢
India 3-Ply Hemp, 1-lb. Balls 8½¢
India 3-Ply Hemp, 1½-lb. Balls. 7@8¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls 9@10¢
Mason Line, Linen, ½-lb. Bls 14¢
No. 2½ Mattress, ¼ and ½-lb. Balls 7¢
Wool, 3 to 6 ply B 6¢; A 6½¢

Vises—

Solid Box 60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting 25@25&5%
Tiger Machinists' 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch 50%
Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Merrill's 20%
Millers Falls 60&10%
Parker's:
Victor 20@25%
Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Sargent's 40%
Snediker's X. L. 33⅓%
Stephens' 33⅓%
Williamson Mfg Co. Double Swivel.. 40&5%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz. $30 25%
Perfection Saw Clamps, ℔ doz. $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
187 Series 60&5%
No. 870 40%
Williamson Mfg. Co. Double Swivel Combination Pipe 40&5%

Wads—*Price per M.*

B. E., 11 up 60¢
B. E., 9 and 10 70¢
B. E., 8 80¢
B. E., 7 80¢
P. E., 11 up $1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Ely's B. E., 11 and larger $1.70@1.75
Ely's P. E., 12 to 20 $3.00@3.25
} Dis. 15%

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 55%
Ground 60%
Plain or Unground 65%
Country Hollow Ware, per 100 lbs. $2.75
White Enameled Ware:
Maslin Kettles 70%
Covered Wares
Tinned and Turned 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 60%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

Washers—Leather, Axle—

Solid 80&10@80&10&10%
Patent 90@90&5%
Coil: ¼ 1 1¼ 1½ *Inch.*
10¢ 11¢ 12¢ 13¢ *per box*

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers ... $5.70 4.80 3.50 3.30 3.10
The above prices are based on 5.70¢ off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... *per lb.* 1¾@2¢

Weather Strip—Flexible Felt—

Lined, per 100 ft., $2; $3; $4 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 50&10%

Wedges—

Oil Finish lb. 2.70@2.80¢

Weights—Hitching—

Covert Mfg. Co. 40%
Covert's Saddlery Works 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District $27.50@$28.00
Southern Territory $20.00@$23.00
Western and Central Districts $23.00@$25.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 80%
10 to 18 80&2½%
19 to 26 80&7½%
27 to 36 80&2½%
Galvanized:
6 to 9 75&5%
10 to 14 75&7½%
15 to 16 72½&10&2½%
19 to 26 75%
27 to 36 72½%
Coppered:
6 to 9 75&5%
10 to 14 75&7½%
15 to 18 72½&10&2½%
19 to 26 75&10&5%
27 to 36 75%
Tinned:
6 to 14 75&10&2½%
15 to 18 75&7½%
Annealed, Steel and Tinned, on Spools 70&10&10@70&10&10&10%
Brass and Copper on Spools 60&5@60&10&5%
Brass, list Feb. 26, '96 15%
Copper, list Feb. 26, '96 25%
Cast Steel Wire 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, '03... 90&25@90&30%
Brass Cup Hooks and Brass Screw Hooks 85&10%

Wire Cloth and Netting—

Galvanized Wire Netting 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.10
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3 ¢
Nos. 4 and 5 Mesh, sq. ft. 3½¢
No. 6 Mesh, sq. ft. 3½¢
No. 8 Mesh, sq. ft. 4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural 75&10@75&10&10%
Alligator or Crocodile 70&10@75%
Baxter Pattern S Wrenches 70&5@70&10%
Drop Forged S 45@45&5%
Acme 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Briggs Pattern 40%
Combination Black 40&5%
Combination Bright 40%
Merrick Pattern 50%
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes', Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches, ℔ doz. $6.25
Elgin Rethreading Attachment, one die, ℔ doz. $6.25
Elgin Extra Dies, ℔ doz. $3.00
Elgin Extra Jaws, ℔ doz. $1.75
Elgin Monkey Wrench Pipe Jaws, ℔ doz. $2.10
Gem Pocket 70%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
Solid Handles, P., S. & W. 50&10@60
Stillson 65%
Vulcan Chain 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ℔ gross, $7.50; ℔ doz. $0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ℔ doz. $48.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '02 90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed.. 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

Zinc—

Sheet per 100 lbs., $8.25@8.50

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:	
1 to 1⅞ in. round and square	₩ ℔ 2.15¢
1½ to 4 in. x ⅜ to 1 in.	₩ ℔ 2.15¢
1½ to 4 in. x ¼ to 5-16	₩ ℔ 2.35¢
Rods—⅜ and 11-16 round and square	₩ ℔ 2.35¢
Angles:	Cts ₩ ℔
3 in. x ¼ in. and larger	2.50¢
3 in. x 3 16 in. and ⅛ in.	2 60¢
1½ to 2½ in. x ¼ in.	2.35¢
1½ to 2¾ in. x 3-16 in. and thicker	2 30¢
1 to 1¼ in. x 3-16 in.	2.35¢
1 to 1¼ x ⅛ in.	2.40¢
⅞ x ⅛ in.	2.55¢
¾ x ⅛ in.	2.65¢
⅝ x ⅛ in.	3.70¢
½ x 3-32 in.	4 20¢
Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ in.	2.35¢
3 in. and larger	2.70¢
Beams	2.50¢
Channels, 3 in. and larger	2.50¢
Bands—1½ to 6 x 5-16 to No. 8	2.35¢
"Burden's Best" Iron, base price	3.05¢
Burden's "H. B. & S." Iron, base price	2.85¢
"Ulster"	3.10¢
Norway Bars	3.30¢
Norway Shapes	3.80¢

Merchant Steel from Store—

	per ℔
Bessemer Machinery	2.00¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black.

	One Pass, C.R. Soft Steel.	R. G. Cleaned.
No. 14	₩ ℔ 2.70	2.80¢
Nos. 18 to 21	₩ ℔ 2.85	2.90¢
No. 27	₩ ℔ 3.00	3.30¢
No. 28	₩ ℔ 3.10	3.40¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ ℔ 11¾@14¢
Patent Planished	₩ ℔ A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16	₩ ℔, 3.05¢
Nos. 22 to 24	₩ ℔, 3.45¢
No. 27	₩ ℔, 3.90¢
No. 28	₩ ℔, 4.15¢

No. 20 and lighter 36 inches wide, 25¢ higher.

METALS—

Tin—

Straits Pig ₩ ℔ 37½@37¾¢

Tin Plates—

American Charcoal Plates (per box.)

A.A.A. Charcoal:	
IC, 14 x 20	$5.90
IX, 14 x 20	7.15
A. Charcoal:	
IC, 14 x 20	$5.15
IX, 14 x 20	6.25

American Coke Plates—Bessemer—

IC, 14 x 20.....108 ℔	$4.25
IX, 14 x 20	5.25

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8.40
IX, 20 x 28 with an 8 lb coating	10.40

Copper—

Lake Ingot	₩ ℔ 19 @20 ¢
Casting	₩ ℔ 18¼@19¼¢
Sheet Copper Hot Rolled, 16 oz	₩ ℔ 23¢
" " 14 "	" " 24¢

Sheet Copper Cold Rolled, 1¢ ₩ ℔ advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.

Bottoms, Pits and Flats	₩ ℔ 27¢ basis
Planished Copper, 1¢ ₩ ℔ more than Polished.	

Seamless Brass Tubes—

Outside Diameter. Net. Base Price 22¢

Stubs' W G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	..	....	..	....	..	....	..	..	..	..	22	22
12	..	....	..	....	..	....	28	28	27	27	22	22
13	..	....	..	....	..	....	29	29	27	27	22	22
14	..	....	..	....	..	29	29	27	27	27	23	23
15	..	....	..	30	29	29	29	27	27	27	23	23
16	..	....	30	30	29	29	29	27	27	27	24	24
17	..	33	30	30	29	29	29	27	27	27	25	25
18	58	35	31	31	30	30	30	28	28	28	26	26
19	62	35	31	31	30	30	30	28	28	28	27	27
20	64	35	31	31	30	30	30	28	28	28	28	28
21	66	51	33	32	32	30	29	29	29	29	29	29
22	71	56	35	35	34	33	31	30	30	30	30	30
23	76	61	37	37	33	35	33	33	33	33	31	33
24	81	66	53	48	46	45	44	43	41	40	40	41
25	86	71	56	51	49	47	46	45	44	44	45	46

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
30	29	24	23	22	22	22	22	22	22	22	23	24	26	28	29¢₩ ℔

Brazed Brass Tubing.

Discount from List June 6, 1898, 25&2%.
Bronze and Copper Tubing advance on Brass List 3¢

Roll and Sheet Brass—

Discount from List June 6, 1898, 17½%.

Spelter—

Western ₩ ℔ 6¾ @ 7¼¢

Zinc.

No. 9, base, casks, ₩ ℔ 8½¢ | Open ₩ ℔ 9 ¢

Lead.

American Pig	₩ ℔ 6¼@6½¢
Bar	₩ ℔ 7 @7½¢

Solder.

¼ & ½, guaranteed	₩ ℔ 23¼@24 ¢
No. 1	₩ ℔ 21¾@22¼¢
Refined	20@20¼

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ ℔ 15½¢
U. S.	15 ¢
Hungarian and Japanese	14 ¢

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

Small lots	₩ ℔ 39¢
100-℔ lots	₩ ℔ 37¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Copper, Heavy Cut and Crucible	₩ ℔ 16¼¢
Copper, Heavy and Wire	₩ ℔ 16 ¢
Copper, Light and Wire	₩ ℔ 15 ¢
Heavy Brass	₩ ℔ 10.50 ¢
Light Brass	₩ ℔ 8.50 ¢
Lead	₩ ℔ 5.25 ¢
Tea Lead	₩ ℔ 4.75 ¢
Zinc	₩ ℔ 4.75 ¢
No. 1 Pewter	₩ ℔ 26 ¢
Pure Aluminum, Sheet	₩ ℔ 22 ¢
No. 1 Yard Wrought	$17.50@18.50
Wrought Pipe	$14.25@14.75
No. 1 Machinery Cast	$14.00@14.75
Stove Plate	$11.00@12.00

THE IRON AGE

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